INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.

2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.
Plakootam, Joseph Luke

KNOWLEDGE UTILIZATION FOR RURAL DEVELOPMENT: A COMPARATIVE
STUDY OF A GOVERNMENT RURAL HEALTH CARE SYSTEM AND A
VOLUNTARY HEALTH CARE ORGANIZATION IN INDIA

University of Hawaii

University Microfilms International 300 N. Zeeb Road, Ann Arbor, MI 48106

Ph.D. 1985
KNOWLEDGE UTILIZATION FOR RURAL DEVELOPMENT:
A COMPARATIVE STUDY OF A GOVERNMENT RURAL HEALTH CARE SYSTEM
AND A VOLUNTARY HEALTH CARE ORGANIZATION IN INDIA

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN SOCIOLOGY
AUGUST 1985

By
Joseph Luke Plakoottam

Dissertation Committee:
Gene Kassebaum, Chair
Herbert R. Barringer
Kiyoshi Ikeda
Patricia G. Steinhoff
Wijitha B. Dissanayake
ACKNOWLEDGEMENTS

This study is the culmination of my interest in the role of voluntary organizations in rural development in India. As a fellow of the Indian Council of Social Science Research (ICSSR) I had begun a study of voluntary organizations and their role in non-formal education for a Ph. D. in Sociology at the University of Poona, under the guidance of Professor Y. B. Damle in 1978.

In August 1979 I received a degree study award from the Communication Institute of the East West Center to continue my graduate studies at the University of Hawaii at Manoa. I have gained valuable theoretical understanding of the problems of social change and development by taking a wide range of courses in Sociology, Political Science, Communication, Planning, Asian Studies and Social Work. At the East West Center I was involved with the Communication Policy and Planning Project under the direction of Dr. Syed Rahim and later with the Transnational Knowledge Utilization Project with research associates Drs. George Beal, Wimal Dissanayake and Clayton Vollan of the Communication Institute. The present study was conceptualized as part of the latter project in 1982.

I am grateful to Dr. George Beal for suggesting a study of health care organizations as knowledge utilization systems in India using a comparative methodology. Attending the "Conference on Transnational Knowledge Utilization: Theory and Methods" organized by Dr. Beal at the Communication Institute, East West Center, April 25-30, 1982
attended by most of the scholars who were instrumental in the
development of the "knowledge utilization" perspective was immensely
helpful.

Grants for field research in India from July 1982 to January 1983
were provided by the Communication Institute, East West Center. Upon
completion of my degree study award the newly-created Institute of
Culture and Communication awarded me a joint doctoral research
internship from September 1983 to June 1985. Without these generous
grants I would not have been able to complete this study. I would
like to thank Dr. Jack Lyle, Director, Communication Institute and
Dr. Mary G. F. Bitterman, Director, Institute of Culture and
Communication for supporting my study. Ms. Merry Lee Corwin and
Ms. Meg White, program officers and Ms. June Kuramoto and Ms. Cheryl
Hidano, program secretaries have always taken care of all my
programmatic needs at the East West Center promptly and graciously.

I was privileged to have a dissertation committee where I had
fruitful interaction with each member. Professor Gene Kassebaum,
Committee Chairman, has always been most encouraging by his gentle
persuasion. His knowledge of the Indian social system has been
valuable. Much of the credit for the qualitative data analysis should
go to him. Professor Herbert R. Barringer's course on Theory
Construction helped me in the formulation of the Knowledge Utilization
model I have used in the study. Professor Kiyoshi Ikeda provided me
with many insights into program evaluation and planned social change
strategies. Professor Patricia G. Steinhoff's courses on Comparative
Sociology and Theories of Social Conflict helped me immensely in the analysis of the theoretical context of my study. Her acute observations and comments have always been useful in focussing my arguments. I have used Dr. Wimal Dissanayake's work in development communication to derive some hypotheses I have tested in this study. He has also been most enthusiastic about my work at the East West Center which has helped me in obtaining continued financial support.

Mrs. Amanda and Mr. William Kautz have been wonderful "hosts" to me and my family in Honolulu. Not only did they provide a home away from home but also undertook the painstaking task of editing the draft of my dissertation. I am truly indebted to them for their aloha.

Many people have helped me during my field study in India. It is difficult to thank each of them by name. However I would like to acknowledge the following: Professor Christopher C. Benninger, Director and his staff at the Center for Development Studies and Activities, Poona, for office and secretarial assistance; the Tata Institute of Social Sciences, Bombay and the National Institute of Educational Planning and Administration, New Delhi, for hostel accommodation; Mr. E. I. Cherian and family (Poona), Mr. and Mrs. N. J. Abraham (Poona), Mr. K. A. Mathew and family (New Delhi), Dr. Mary Ipe (Bombay), Professor P. A. Johnson and family (Bombay), Dr. Biswaroop Das and family (Surat), and Mr. Mrinal Bhaumick and family (Baroda) for hospitality; Professor T. J. John Kuriyan, CDSA, Poona for allowing me use of his comprehensive reference collection on health care systems in India; Dr. A. K. Gopal, National Institute of Public
Cooperation and Child Development, New Delhi for providing access to his research files on CRHP, Jamkhed; Mr. Augustine Veliath, Dr. Ruth Harner and Mrs. Purabi Pande of the Voluntary Health Association of India, New Delhi, for stimulating discussions and providing free access to files on voluntary health care organizations in India.

Special thanks to Dr. Raj and Dr. (Mrs.) Mabelle Arole for permitting me to study their project despite some unsavory experiences they have had with researchers from foreign universities. They have been very hospitable and willing to spare time to discuss their work with me. The staff, the village health workers and the villagers of the Comprehensive Rural Health Project treated me as one of their own making my field research a happy experience.

The District Health Officer, Ahmednagar and his staff and the doctors and staff at the Primary Health Center at Tisgaon and the Taluka Civil hospital at Pathardi were always hospitable and ready to discuss problems and issues with me and provide me with whatever data I required.

Mr. Vilas Khajekar, graduate student in Sociology, University of Poona has been an able interpreter and research assistant. His familiarity with the district and its people proved to be an unexpected boon in my field research. Ms. Marilyn Cherian assisted in collecting data on voluntary organizations in India. Thanks are also due to Dr. K. S. Rajyashree for helping with translation of material from Marathi.
I have greatly benefitted from my interaction with the faculty members and fellow graduate students. Jan and Jessie, secretaries in the department of Sociology have always provided cheerful assistance in completing all the requirements of my graduate work.

My wife Alphy had to suffer the pains of separation during my field research and bear with me through the five years of graduate study giving me emotional support and constant encouragement. Our son, Dominick Luke, gave me the incentive to hasten the writing of the dissertation so that we could proceed to do other things.

While this study would not have been possible without the help of all the people mentioned and unmentioned, the responsibility for the contents and any errors therein is entirely mine.
ABSTRACT

Most theories of social change, generally derived either from Marx's or Weber's formulations, are inadequate for the study of planned social change. In this study we have used a modified "knowledge utilization" perspective for studying planned change in the area of rural health care in India. The six stages of the model are: problem identification, problem definition, problem specification, program formulation, program implementation, and program adoption. We have identified the various actors, and their primary area of action corresponding to these stages. These are: (i) knowledge generation by researchers, (ii) legitimation by policy makers, (iii) goal setting by technical experts, (iv) strategy selection by change agency, (v) diffusion by change agents, and (vi) evaluation by adopters.

Very few knowledge utilization studies using comparative analysis have been undertaken in India. In the context of the recent interest in achieving "health for all by A. D. 2000" and the greater emphasis on rural development, we decided to study how knowledge utilization in health care delivery systems is contributing to rural development in India. For this we studied a government rural health care system and a voluntary (not-for-profit) rural health care organization in the Ahmednagar district of Maharashtra state. A case study method was used for studying the two organizations, integrating both qualitative and quantitative data in the analysis.
We found that the voluntary organization was more effective in knowledge utilization leading to greater rural development in the region. The major findings of the study are:

1. Greater coherence among the stages of knowledge utilization leads to greater rural development.

2. Deliberate attempt to change the social system is necessary for effective knowledge utilization in a traditional society.

3. A charismatic leader with traditional background is more effective than a bureaucrat with modern training in solving problems which result from traditional social structure as in the case of health care.

4. Change agent homophily coupled with credibility with adopters is one of the most crucial aspects in knowledge utilization effectiveness as in the case of village health workers.

5. Borrowing ideas from the people to help them solve their own problems leads to greater knowledge utilization effectiveness.

6. People's participation from the very first rather than in the last stage will enhance knowledge utilization and thereby rural development.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td></td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td></td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td></td>
<td>xiv</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td></td>
<td>xvi</td>
</tr>
<tr>
<td>CHAPTER I</td>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>A. Justification for the Study</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>B. Outline of the Study</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Notes to Chapter I</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>CHAPTER II</td>
<td>THEORETICAL CONTEXT</td>
<td>10</td>
</tr>
<tr>
<td>A. Definition of Development</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>B. Theories of Development and Underdevelopment</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>1. Orthodox Theories</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>2. Critique of Orthodox Theories</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>3. Radical Theories</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>4. Critique of Radical Theories</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>5. Communication and Development</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>6. Diffusion of Innovations and Development</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>7. Health and Development</td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>8. Rural Development</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>9. Knowledge Utilization for Rural Development</td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>10. Knowledge Utilization as Planned Change</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>C. Hypotheses</td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Notes to Chapter II</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>CHAPTER III</td>
<td>METHODOLOGY</td>
<td>46</td>
</tr>
<tr>
<td>A. Definition of Terms</td>
<td></td>
<td>46</td>
</tr>
<tr>
<td>B. Operationalization of Variables</td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>C. Operationalization of Hypotheses</td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>D. The Case Study Method</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>E. Field Research</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>F. Data Management and Analysis</td>
<td></td>
<td>68</td>
</tr>
<tr>
<td>Notes to Chapter III</td>
<td></td>
<td>69</td>
</tr>
</tbody>
</table>
CHAPTER IV. HEALTH CARE SYSTEM IN INDIA: A HISTORICAL ANALYSIS

A. Problem Identification
   1. Comparative data
   2. Longitudinal Data on India
   3. Health Related Areas

B. Problem Definition
   1. Bhore Committee (1943)
   2. Chopra Committee (1948)
   3. Mudaliar Committee (1959)
   4. Kartar Singh Committee (1971)
   5. Health For All by 2000 A. D.
   6. The Alternative Strategy

C. Problem Specification
   1. Population Growth
   2. Maternal and Child Health
   3. Disease Control
   4. Investment Pattern in Health
   5. Health Care Facilities and Personnel

D. Program Formulation
   1. Primary Health Centre
   2. National Family Planning Programme
   3. Voluntary Organizations

E. Program Implementation
   1. Dais Training Programme
   2. Community Health Worker Scheme
   3. Health Guides

F. Program Adoption
   1. Family Planning Adoption
   2. Dais as Change Agents
   3. Impact of Health Guides

G. Summary

Notes to Chapter IV

CHAPTER V. CASE STUDY OF A GOVERNMENT HEALTH CARE DELIVERY SYSTEM AS A KNOWLEDGE UTILIZATION SYSTEM

A. Problem Identification
   1. Illness as Curse of Gods
   2. Delay in Seeking Medical Help
   3. Lack of Environmental Sanitation
   4. Poverty and Accessibility

B. Problem Definition

C. Problem Specification

D. Program Formulation

E. Program Implementation
   1. Family Planning
   2. Community Health Volunteers/Health Guides

F. Program Adoption
   1. Utilization of Curative Services
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis Eleven</td>
<td>231</td>
</tr>
<tr>
<td>C. Conclusion</td>
<td>234</td>
</tr>
<tr>
<td>Notes to Chapter VII</td>
<td>235</td>
</tr>
<tr>
<td>CHAPTER VIII. SUMMARY AND CONCLUSIONS</td>
<td>236</td>
</tr>
<tr>
<td>A. Theoretical Integration</td>
<td>236</td>
</tr>
<tr>
<td>B. Methodological Integration</td>
<td>239</td>
</tr>
<tr>
<td>C. Summary of Findings</td>
<td>240</td>
</tr>
<tr>
<td>D. Conclusions</td>
<td>243</td>
</tr>
<tr>
<td>1. Coherence among Stages of Knowledge</td>
<td>243</td>
</tr>
<tr>
<td>Utilization System</td>
<td>243</td>
</tr>
<tr>
<td>2. Deliberate Social Change</td>
<td>244</td>
</tr>
<tr>
<td>3. Leadership Styles</td>
<td>245</td>
</tr>
<tr>
<td>4. Change Agent Homophily and Credibility</td>
<td>248</td>
</tr>
<tr>
<td>5. Communication Styles</td>
<td>250</td>
</tr>
<tr>
<td>6. People's Participation in Rural Development</td>
<td>252</td>
</tr>
<tr>
<td>Appendix A. Glossary of Indian Terms and Abbreviations</td>
<td>255</td>
</tr>
<tr>
<td>Appendix B. List of Voluntary Organizations Contacted</td>
<td>258</td>
</tr>
<tr>
<td>Appendix C. List of People Interviewed in Government System</td>
<td>260</td>
</tr>
<tr>
<td>Appendix D. List of People Interviewed in Jamkhed Project</td>
<td>263</td>
</tr>
<tr>
<td>Appendix E. Interview Guides</td>
<td>265</td>
</tr>
<tr>
<td>Appendix F. Codebook</td>
<td>268</td>
</tr>
<tr>
<td>Appendix G. Song Sung by Village Health Workers</td>
<td>272</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>273</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population Growth and Projections: South Asia and Selected Countries</td>
<td>73</td>
</tr>
<tr>
<td>2</td>
<td>Life Expectancy and Infant Mortality Rates: South Asia and Selected Countries</td>
<td>74</td>
</tr>
<tr>
<td>3</td>
<td>Availability of Trained Medical Personnel: South Asia and Selected Countries</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>Population Growth and Sex Ratio in India, 1901-1981</td>
<td>78</td>
</tr>
<tr>
<td>5</td>
<td>Birth and Death Rates in India, 1901-1981</td>
<td>79</td>
</tr>
<tr>
<td>6</td>
<td>Average Life Expectancy at Birth in India, 1901-1981</td>
<td>80</td>
</tr>
<tr>
<td>7</td>
<td>Infant Mortality Rates in India, 1911-1978</td>
<td>81</td>
</tr>
<tr>
<td>8</td>
<td>Literacy Rates in India by States, 1971 and 1981</td>
<td>85</td>
</tr>
<tr>
<td>9</td>
<td>Health Care Personnel in India, 1983</td>
<td>89</td>
</tr>
<tr>
<td>10</td>
<td>Pattern of Investment in Health in India, 1951-1985</td>
<td>96</td>
</tr>
<tr>
<td>11</td>
<td>Sterilizations in India, 1956-1983</td>
<td>101</td>
</tr>
<tr>
<td>12</td>
<td>Percentage of Eligible Couples Currently and Effectively Protected by Family Planning in India by States, 1981</td>
<td>109</td>
</tr>
<tr>
<td>13</td>
<td>Population Growth in Ahmednagar District, 1901-1971</td>
<td>118</td>
</tr>
<tr>
<td>14</td>
<td>Population Growth in Ahmednagar District, 1961-81, by Taluka</td>
<td>119</td>
</tr>
<tr>
<td>15</td>
<td>Characteristics of Villages Selected for Study in Pathardi</td>
<td>122</td>
</tr>
<tr>
<td>16</td>
<td>Types of People Interviewed in the Government Health Care System, Ahmednagar District</td>
<td>123</td>
</tr>
<tr>
<td>17</td>
<td>Existing and Planned Health Facilities in Ahmednagar District</td>
<td>135</td>
</tr>
<tr>
<td>18</td>
<td>Number of Outpatients Treated and Cholera Innoculation at Primary Health Center, Tisgaon, 1970-1981</td>
<td>145</td>
</tr>
<tr>
<td>19</td>
<td>Contraceptive Distribution through Primary Health Center, Tisgaon, 1966-1982</td>
<td>148</td>
</tr>
</tbody>
</table>
Table | Page
---|---
20 | Number of Sterilizations by Primary Health Center, Tisgaon, 1975-1982 .......................................................... 149
21 | Number of Deliveries according to Place of Birth, in Pathardi Taluka, 1970-1981 ............................................................ 150
22 | Characteristics of Villages under CRHP, Jamkhed, Selected for the Study .......................................................... 156
23 | Types of People Interviewed at the CRHP, Jamkhed ............. 157
24 | Vital Statistics of the CRHP, Jamkhed .......................... 181
25 | Services Rendered at the CRHP, Jamkhed ......................... 182
26 | Family Welfare Planning Services Rendered by the CRHP, Jamkhed .......................................................... 183
27 | Research Knowledge Available on the Government Health Care System and the Voluntary Health Care Organization ... 192
29 | Change Agency Perspective and Change Agent Behavior ....... 196
30 | Social Environment, Adopter Perspective and Adopter Actions 197
31 | Knowledge Utilization Effectiveness .............................. 198
## LIST OF ILLUSTRATIONS

### Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Approaches to Dependency</td>
<td>22</td>
</tr>
<tr>
<td>2</td>
<td>Theories of Imperialism</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Lerner's Model of Development</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>The Clark-Guba Model of Knowledge Production and Utilization</td>
<td>34</td>
</tr>
<tr>
<td>5</td>
<td>Typology of Social Structure</td>
<td>37</td>
</tr>
<tr>
<td>6</td>
<td>Typology of Knowledge</td>
<td>37</td>
</tr>
<tr>
<td>7</td>
<td>Knowledge Utilization System: Stages, ACTION, [Actors]</td>
<td>39</td>
</tr>
<tr>
<td>8</td>
<td>Knowledge Utilization for Rural Development: Theoretical Model</td>
<td>42</td>
</tr>
<tr>
<td>9</td>
<td>Organization Structure of the Block Level Health Care System</td>
<td>134</td>
</tr>
<tr>
<td>10</td>
<td>Organization Structure of the Comprehensive Rural Health Project, Jamkhed</td>
<td>174</td>
</tr>
</tbody>
</table>

### Plates

<table>
<thead>
<tr>
<th>Plate</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Map of Ahmednagar Showing Study Areas</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Map of Pathardi Taluka Showing Villages and Other Health Facilities Visited For the Study</td>
<td>121</td>
</tr>
<tr>
<td>3</td>
<td>Map of Jamkhed Taluka Showing Villages Visited for the Study</td>
<td>155</td>
</tr>
</tbody>
</table>
Chapter I

INTRODUCTION

Although the so-called "traditional societies" are so classified because of presumed stability and resistance to change, they have been changing all the time, even though not at the pace or in the manner of western societies which they are supposed to be imitating. Along with the assumption of traditional stagnation throughout many centuries there was the understanding that change can be induced or planned. Once the dependent and independent variables were identified inducing change was expected to be easy. Development is the more commonly used term to designate change in modern social science literature. The term "social change" does not convey the interplay of various forces involved in change in a dynamic fashion, nor does it include the ideology of progress. As the term "development" began to be applied more and more to "traditional societies" there was greater emphasis on rural development since one of the predominant characteristics of "developing societies" is the preponderance of non-mechanised agriculture and rural settlements.

Social science literature of the past fifty years is replete with theories explaining social change and development in urban and rural areas (Parsons, 1951; Deutsch, 1953; Lerner, 1957; Rostow, 1960; Schramm, 1964; Furtado, 1965; Pye, 1965; Frank, 1967a; Dos Santos, 1970; Galtung, 1971; Wallerstein, 1976). All these theories are directly or indirectly derived from the formulations of Karl Marx (1853) or Max Weber (1947 [1930]). While these often competing
perspectives are useful in understanding social change at the macro-levels, i.e., of a society as whole, they do not lend themselves to adequate explanations of social change at micro-levels, i.e., community or village levels, particularly when one attempts to study planned social change efforts at the community or village levels. Although modernization or dependency or imperialism perspectives can be stretched to apply to a village community, each seems inadequate to explain the day to day behavior of the villagers. It seems too far-fetched to suggest that a villager is not adopting a high-yielding variety of rice because he has no "need for achievement" (McClelland, 1971) or "empathy" (Lerner, 1957) or because he is caught in the vicious circle of dependency (Frank, 1967a, Dos Santos, 1970) or because he is caught in the web of imperialism (Galtung, 1971; Wallerstein, 1978) or monopoly capital (Magdoff, 1969; Baran and Sweezy, 1966). These kinds of explanations are useful when we talk of social change in a society as whole. It makes sense to explain India's slow rate of industrial growth using modernization, dependency or imperialism perspectives.

For purposes of this study knowledge utilization is considered one of the most important aspects of rural development. It may be stated that change or development occurs through the utilization of new knowledge. In the absence of new knowledge there is no basis to talk about resistance to change. Non-utilization of new knowledge need not be bad in itself.¹ A villager may know that his diet is inadequate for proper nutrition but may not be able to change it on cultural or religious grounds or due to sheer poverty. However, it is recognized
that change in rural life styles can be achieved only through utilization of appropriate knowledge.

Planned social change involves the various processes and stages in the knowledge utilization system, viz., problem identification, problem definition, problem specification, program formulation, program implementation, and program adoption. A number of actors are involved in this process. They would include, first of all, the research community which generates the knowledge leading to problem identification through exploratory and evaluation studies. Policy makers legitimize the problem identified by the researchers by defining it in popular terms. Technical experts set the goals and targets while specifying the solutions to the problem. Change agency selects appropriate strategies to attain the goals and objectives while formulating programs. Change agents diffuse the program while implementing it. Finally the adopter community accepts or rejects the program.

A. Justification for the Study

Knowledge utilization requires organizations or mechanisms which deal with one or more of the aspects of this process. In a democratic country such as India, the government undertakes many of these functions through its various organizations such as schools, universities, research laboratories, health care delivery system etc.

According to Ronald Havelock (1969), one of the founders of the knowledge utilization perspective, very few comparative studies of knowledge utilization systems have been undertaken, much less
comparative studies of specific knowledge utilization strategies employed by different kinds of organizations and change agents. There has been a general disillusionment with macro-approaches such as modernization, underdevelopment, dependency, imperialism etc. in explaining social change in rural areas. It has been suggested that we look into micro-experiments for successful change strategies in rural development (Sethi, 1978: 1307; Sheth, 1984). Although some comparative studies of similar organizations exist, they have not been treated as knowledge utilization systems (Pandey, 1979; Gwatkin, Wilcox and Wray, 1980; Faruqee and Johnson, 1982; Alliband, 1983).

Thus it was decided that the present study would be formulated to make a comparative analysis of a government and a voluntary organization in the area of health care as knowledge utilization systems. Health care organizations were selected for study because of the researcher's past experience with some of them in India. Yet another reason why this area was chosen was the recent interest in primary health care as a goal for all by A. D. 2000 to which India has committed itself (World Health Organization, 1978; Ministry of Health and Family Welfare, 1981).

There is a general belief that government organizations with their formal bureaucratic structure are often not as successful as voluntary organizations operating in the same sphere. Nowhere is this belief more evident than in the areas of rural health care in India. This study proposes to make a comparative analysis of a government rural health care delivery system and a voluntary health care organization. The government of India has been involved in improving
health care delivery for all on a concerted basis ever since achieving independence in 1947. Voluntary health care organizations considerably pre-dating Independence, are run by not-for-profit organizations which operate in regions of their choice. In addition to the two not-for-profit types, a large number of hospitals are run as private profit-making enterprises mainly in urban areas. For purposes of this study we shall restrict ourselves to the government and the voluntary sector organizations working in the rural areas. Both will be treated primarily as knowledge utilization systems involved in delivery of curative and preventive health care services including treatment of diseases, family planning and birth control services, as well as nutrition and health education.

For this purpose we studied the Ahmednagar district (Maharashtra State) health care delivery system with attention focussed on one primary health center which is the basic health care delivery unit of the government system. We also studied the Comprehensive Rural Health Project at Jamkhed in the same district. Plate 1 shows the location of the study areas in the Ahmednagar district. There is some overlap in the catchment area of these two organizational units since both are in the same district. However, this overlap facilitates comparison of the two cases since the many site characteristics they share are controlled. Mutual overlap may also highlight some promising factors as far as policy implications are concerned.
Plate 1: Map of Ahmednagar District, Maharashtra State Showing Study Areas

It is hoped that this kind of study will enhance the search for alternative development strategies which policy makers are looking for. In India there has been serious discussion on the "capacity of the people to take control of their own health care and create confidence that they could manage their services better than any centralised system" (Antia, 1981: 1363). This study will check whether indeed the voluntary health care organization is more effective based on comparative data. As the study will compare only two micro-level organizations we are not hoping to draw all-India level conclusions. We hope that this study will at least provide a starting point for making more general conclusions based on additional comparative data and studies.

B. Outline of the Study

This study is divided into eight chapters. Chapter I is the introduction which briefly defines the problem and the rationale behind the study. Chapter II reviews the theoretical context of the study from which the knowledge utilization perspective is adopted as most suitable for the scope and purposes of this study. It presents a revised theoretical model of knowledge utilization system based on the "general model" as approximated by Peter M. Meehan and George M. Beal (1977). An analytical model is also presented to capture the hypothesized relationships among the variables in the study. Finally eleven major hypotheses are derived based on the literature survey.
Chapter III outlines the research methodology used in the formulation, data collection, data analysis and writing of this study. Terms used in the study are defined. Variables and hypotheses are operationalized to indicate the kind of data that were to be collected. The case study method employed in the study is discussed before reporting the field research and data management and analysis procedures.

Chapter IV discusses health care system in India as a knowledge utilization system from a historical perspective. This discussion is essential to gain an understanding of the context of the study. As the study is a comparison of government and voluntary systems of health care organizations and their impact on rural development the role of both these is discussed in some detail. Attention also will be paid to the campaign for "Health for All by 2000 AD." Chapter V presents a detailed case study of a government health care system. The Ahmdenagar district health care system with special emphasis on Tisgaon primary health center will be discussed as a knowledge utilization system. Chapter VI presents a detailed case study of the Comprehensive Rural Health Project at Jamkhed, the voluntary health care organization, as a knowledge utilization system.

Chapter VII makes a comparative analysis of the two cases presented in chapter V and chapter VI. The various hypotheses presented in chapter II will be discussed to see whether the data support them. Chapter VIII summarizes the findings and conclusions. It also highlights the policy implications of the study.
1. Extensive studies of the use and non-use of knowledge in the adoption of new corn varieties by farmers have been undertaken by American Universities in the 1950s and the 1960s. Most of the pioneers in the field of diffusion of innovations and the knowledge utilization perspectives were involved in these studies. See Everett M. Rogers (1962, 1983) for a comprehensive review of these studies.

2. This study was originally conceived as part of a large-scale project at the Communication Institute, East West Center, Honolulu in 1980 called 'Transnational Knowledge Utilization Project,' under the direction of George M. Beal who is one of the early authorities in diffusion of innovations research. This project was intended to study knowledge utilization on a comparative basis between countries, within countries, and between and within organizations in Asia and the Pacific. Initially attention was to be focussed in the areas of agriculture and health which are the most relevant to countries of Asia and the Pacific in terms of policy implications.

3. In 1978-79, the researcher had done some preliminary investigations into a number of rural development projects and their role in non-formal education. The Comprehensive Rural Health Project, Jamkhed was one of these.
Chapter II

THEORETICAL CONTEXT

In 1853 Karl Marx, commenting on 'The Future Results of British Rule in India,' wrote in the New York Daily Tribune: "England has to fulfill a double mission in India: one destructive, the other regenerating--the annihilation of the old Asiatic society, and the laying of the material foundations of Western society in Asia" (1979: 217-18)."

Despite Marx's great concern for India's welfare under the British colonial rule, he believed in the inevitability of the establishment of western social structures in India. It was a logical outcome of his theoretical formulation on social change as a gradual progression from primitive, to feudal through capitalist modes of production into the socialist mode leading finally to the ideal mode of communism. Marx treated India as a mixture of the primitive and the feudal modes of production which he called the Asiatic mode. He saw the British mission as that of establishing a capitalist society in India. Therefore he did not see any scope for a socialist revolution in colonial India because for such a revolution to take place the previous mode of production had to exhaust all its possibilities. Marx may have been right in the case of India though he may have been wrong about the rest of Asia, notably about Russia and China. Despite declaring itself a socialist democracy upon gaining independence from Britain in 1947, India still is a mixture of all the various modes of production.
More than a century after Marx spoke of the inevitable plight of India, Daniel Lerner nearly paraphrased him in *The Passing of Traditional Society* when he stated: "Indeed, the western model is virtually an inevitable baseline for Asian development planning because there is no other model which can serve the purpose (1957: 115)."

This sense of inevitability of following the western model has been prevalent in the study of social change in developing countries for the past two centuries. Western anthropologists during the colonial era and western or western-trained sociologists more recently have strengthened this tradition. In fact there is no theory of social change formulated completely in the context of a non-western society.²

There would be little debate whether traditional societies such as India are changing at all. They have been changing all the time though not at the same rate or in the same direction as their western models. Most developing societies including India have been dominated by the western colonial powers who introduced many far-reaching changes into their economic, political and social structures. All these changes were brought about primarily to benefit the colonial rulers even though they may have benefitted the local people to some extent in the long run.³ Most of these societies, often after prolonged struggles, have become independent after the Second World War and have chartered their own path of development. Marxian political ideology guided many of these liberation struggles. Thus it is natural that many of these independent nations have embraced
socialist ideas and principles or are at least sympathetic to them. Often a capitalist model of development is held suspect in these countries even though Marxism itself is a western model. India is sympathetic to the Marxian model and has chosen to take a middle path called socialist democracy where private enterprise thrives alongside state capitalism. Therefore it is difficult to apply any single model of social change to India without modification, be it Marxian or non-Marxian.

A. Definition of Development

"Development" is the more commonly used term to designate change--change that is usually deliberate, directed or planned--in modern social science literature. The concept of development that dominated the 1960s grew out of the historical experience in Europe and in the United States and the colonial experience of Africa, Asia and Latin America, the quantitative empiricism of North American social science, and capitalist economic and political philosophy when definitions of development centered around the criterion of the rate of economic growth (Rogers, 1976: 122). This paradigm implied that poverty was equivalent to underdevelopment. Thus development for the underdeveloped nations meant becoming more like the developed countries as Marx (1853) and Lerner (1957) suggested.

This conception of development is no longer acceptable as such in social science. Development has now been seen as a normative concept which implies choices about goals for achieving what Gandhi called the "realization of the human potential" (Bryant and White, 1982: 3). It
is now generally agreed that growth by itself is not enough and is sometimes undesirable. Nor is it anymore equated with modernization because there are many desirable aspects in the traditional social structure of the developing nations (Bryant and White, 1982: 3-22). Dependency theorists focussed more on the nature of underdevelopment rather than development.

Other analysts focus on the ethical dimensions of development. One of the most eloquent is Denis Goulet who calls development The Cruel Choice (1971), who defines development "as a crucial means of obtaining a good life": sustenance of life (involving the basic requirements of food, shelter, health, and survival); esteem or recognition (involving one's identity, self-respect, and dignity); and freedom from oppression (1968: 299-301). Goulet claimed that as presently conceived, development, in terms of industrialization, urbanization, and modernization or growth, is largely dehumanized. Viewed from this perspective development is defined as liberation from poverty and from a stunted view of self. Development means enhancing self esteem and a sense of efficacy or ability to make choices about the future.

Bryant and White (1982: 14-19) mention four basic aspects crucial to the concept of development in the light of the definitions based on the various perspectives. First, development involves expanding capacity to determine one's future. This includes such economic factors as productive facilities and the social and political institutions that go with it. Second, development involves equity which refers to distributional issues. In the long run economic
development is stimulated by increasing human resources in a country and by equalizing the ability to consume. Third, development includes acquiring leverage for the poor, since economic growth will not automatically be broadly distributed. The poor are also the powerless who do not gain as much of the benefits of development as those with power. The powerlessness of the poor is also critical because it limits the people's capacity to make choices for the future. Lastly, development includes a long range concern for the future. Sustainability refers to the need to conserve soils, energy and minerals wisely and without environmental degradation.

B. Theories of Development and Underdevelopment

According to Ronald H. Chilcote (1981: 271) "a prolific amount of literature by both orthodox and radical theorists exists on the subject of development and underdevelopment." Chilcote identifies six general themes that run through this literature. These are: (i) political development, (ii) development and nationalism, (iii) modernization, (iv) underdevelopment, (v) dependency, and (vi) imperialism. The first three are preferred by orthodox comparativists who derive their theories from varying interpretations of Weber while the last three are favored by radical comparativists who follow Marxian interpretations.

Both Marx and Weber were concerned with development according to Chilcote (1981: 271-72):

Marx concerned himself with development premised on the interaction of people with the material world of productive forces and modes of production. Weber identified distinctive
rational characteristics of bureaucratic order of industrial states. Both thinkers focussed on bourgeois capitalism but Marx looked for transformations in the structural base and attempted to ground his theory on facts of historical reality, and Weber dealt with the requisites of development—emphasizing routinization, efficiency, professionalization, secularity, differentiation, and specialization—and related his theory to ideal conceptions. Some critics would characterize Marx's perspective as revolutionary and realist, his conception of development as dynamic, his method as dialectical; and Weber's understanding would be seen as static, his conception of development as evolutionary and idealist, and his method as rooted in ideal typologies. The influence of these different approaches is evident in contemporary literature on development.

Most of the discussion in the last three decades on social change has been criticisms and reformulations of these two orientations derived from the ideas of Marx and Weber. We shall briefly summarize the major theorists and their ideas into the six major themes as identified by Chilcote (1981: 271).

1. Orthodox Theories of Development
   a) Political Development: Lucien Pye (1965) emphasized development as strengthening the values and practices of Western capitalist democracy. Seymour Martin Lipset (1959) outlined the requisites of democracy in the context of development and political legitimacy. His conditions of democracy included an open class system, economic wealth, and a capitalist economy; the higher the level of industrialization, wealth, and education, the greater the prospects of democracy. Dudley Seers (1977) defined development in terms of basic needs. Fred W. Riggs (1968) examined the "dialectics of developmental change," and Lewis A. Coser (1957) stressed "social conflict" in the theory of change. Leonard Binder et al. (1971)
focussed on the three dimensions of a political system—differentiation, equality and capacity—known as the "development syndrome" as the characteristics of development. The emphasis on western democratic principles is amply evident in these theories.

b) Development and Nationalism: Development often is associated with nationalism, especially in the context of the emerging national states in Africa, Asia, and Latin America. Karl Deutsch (1953) wrote on "nation-preserving, nation-building, and nationalism." Leonard Binder (1964) stressed national integration and political development. Leonard Doob (1964) discussed the psychological basis of patriotism and nationalism. The literature on nationalism usually interprets development as an incremental or asynchronous process of change and growth. Incremental development implies a linear progression from traditional to modern stages, and asynchronous development involves a complex series of changes in the rates of growth from sector to sector in society. Nationalism is seen as providing an ideological impetus for all development.

c) Modernization: Modernization theories emanated from the experience of Western Europe which suggested a linear path toward modern development. Max Weber (1949: 106) contrasted traditional and modern societies as ideal types. Talcott Parsons (1951: 88) offered dichotomous variables which characterized these two types of societies. S. N. Eisenstadt (1964) identified the major structural characteristics of modernization somewhat along the lines suggested by Weber and Parsons, as differentiated political structure and the diffusion of political power and authority into all spheres of
Walt W. Rostow (1960) outlined five stages of modernization: traditional society, preconditions of takeoff, takeoff, drive toward maturity, and age of high mass consumption. Later Rostow (1970) added a sixth stage, "the search for quality." Samuel P. Huntington (1965, 1968) emphasized stability in the face of rapid social and economic changes that accompany modernization. He was keen on containing change stressing upon values of stability, order, balance, and harmony.

David Apter distinguished between development and modernization (1965: 67):

Development, the most general, results from the proliferation and integration of functional roles in a community. Modernization is a particular case of development. Modernization implies three conditions - a social system that can constantly innovate without falling apart...; differentiated, flexible social structure; and a social framework to provide the skills and knowledge necessary for living in a technologically advanced world. Industrialization, a special aspect of modernization, may be defined as the period in society in which strategic functional roles are related to manufacturing.

2. Critique of Orthodox Theories

The orthodox theories of development were uncritically and nearly universally accepted during the early 1960s by social scientists. Since the late 1960s abundant criticism of these theories has somewhat obscured their influence in comparative sociology. Most of the radical theories, which we shall briefly discuss now, have been developed as alternatives to these orthodox theories. Andre Gunder Frank (1967a), in a devastating attack on social science theory of development, faulted Weber, Parsons, Hoselitz and others who elaborated the ideal typical approach on theoretical and empirical
grounds and demonstrated that attempts to apply their theory to underdeveloped countries proved to be totally ineffective. Frank also criticized the stage theory of Rostow for its assumption that underdevelopment is an original state of traditional society when in fact underdevelopment is a consequence of the economic and political expansion of Europe since the fifteenth century. Frank exposed the fallacies of the second approach--the diffusionist view that development can evolve through the spread of knowledge, skills, organization, values, technology, and capital from the advanced to the backward areas of the world. Finally Frank showed the weakness of the psychological theories of development derived from Max Weber's (1930) study of Protestant ethic and capitalism or David McClelland's (1961) theory of achievement motivation.

Three distinct paths to development and modernization were traced by Barrington Moore, Jr., in Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World (1966). Each path leads to a political outcome: Western democracy, fascism, and communism. Moore's work, according to Theda Skocpol (1973: 1):

is virtually the only well-elaborated Marxist work on the politics of modernization to which one can point. Social Origins does not postulate one route to the modern world which must be taken by all countries. Nor does it assign the strategic political roles in modernizing revolutions to the bourgeoisie or the proletariat.

Thus the assessment of the main orthodox theories lead us to the task of rejecting them or revising them for study of social change and development in developing countries such as India. As we have briefly mentioned a major problem with these theories has been that theories
and ideas drawn from the experience of advanced nations have been applied to gain an understanding of rapid and perplexing events in the developing countries. The efforts have been far from satisfactory leading scholars to turn to alternative theories and interpretations of underdevelopment, dependency, and imperialism. Before undertaking a revision of the orthodox theories we shall take a brief overview of the radical theories.

3: Radical Theories on Development and Underdevelopment

a) Underdevelopment: The orthodox theories on development and underdevelopment which we briefly discussed above assumed that development is possible everywhere; that capital and technology might filter down from the advanced to less developed nations. Diffusion of capitalism was believed to be capable of solving the problems of poverty, hunger, health and so on. After the Second World War, it became clear that the diffusionist approach was not necessarily delivering the goods. The intellectual reaction that followed embraced differing perspectives, both non-Marxist and Marxist.

The non-Marxist reaction sprang from the economists associated with the United Nations Economic Commission for Latin America (ECLA) who divided the world into the industrialized center and the periphery providing raw materials. In their perspective both would benefit from maximizing production. The most representative theorist in this group is Celso Furtado (1964) who favored autonomy as a solution to national development.

According to Aiden Foster-Carter (1974: 69) while development is firmly rooted in Marxist origins, underdevelopment is essentially
non-Marxist in its origin even though Marx was aware of the tendency of capitalism to generate both wealth and poverty. Samir Amin (1976: 199) on the other hand credits Marx with the brilliant insight about the inability of colonial powers to preclude the local development of capitalism. Lenin recognized the benefits of advanced forms of industrial organization and his theory of imperialism condemned capitalism as it affected less developed countries (Chilcote, 1981: 289).

It was Andre Gunder Frank (1967a) who attempted to formulate a theory of underdevelopment within the Marxist context. Frank distinguished center and periphery by referring to metropole and satellite. Frank set forth a number of premises, mainly, that underdevelopment is not an original or traditional condition, and that the view of dual societies--modern, capitalist, developed vs isolated, feudal/precapitalist, underdeveloped--is false because underdevelopment of backward areas is the result of the same historical process of capitalist development that shaped the development of the progressive areas. In the last two decades there has been a flurry of studies basically along these lines about underdevelopment in Africa, Asia, and Latin America (Frank, 1967b; Griffin, 1969; Rodney, 1972; Lippit, 1976).

Utilizing somewhat similar arguments as the underdevelopment theorists several scholars have focussed on questions of unequal exchange, unequal development, and uneven development. Arghiri Emmanuel (1972) stated that the relations between the center and the periphery are unequal and therefore necessitate an analysis of the
problem of class struggle. Samir Amin's (1976) theory of unequal
development acknowledges the different patterns of transition to
peripheral capitalism and to central capitalism as the consequences of
the impact of the capitalist mode of production and its mechanisms of
trade upon precapitalist formations, resulting, for instance, in the
destruction of crafts without being replaced by local industrial
production. Uneven development (Bluestone, 1972) occurs where those
who control capital resources invest them in products, machinery,
regions and workers where the maximum return can be expected. This
leads to the increase in the gap between the rich and the poor.

b) Dependency: Dependencia or dependency is a concept popularly
used in comparative analysis of the third world countries in Asia,
Africa, and Latin America. The term has become quite fashionable
among both orthodox and radical theorists leading to much confusion.
In his elaboration of a theory of imperialism Lenin referred to the
concept of dependency (Lenin, 1967: 1: 742-743):

Not only are there two main groups of countries, those owning
colonies, and the colonies themselves, but also the diverse
forms of dependent countries which, politically, are formally
independent, but in fact, are enmeshed in the net of financial
diplomatic dependency.

Contemporary perspectives on dependency reveal contrasting forms
of dominance and dependence among the nations of the capitalist
world. According to Dos Santos (1970: 231):

By dependence we mean a situation in which the economy of
certain countries is conditioned by the development and
expansion of another economy to which the former is
subjected. The relation of inter-dependence between two or
more economies, and between these and world trade, assumes the
form of dependence when some countries (the dominant ones) can
do this only as a reflection of that expansion, which can have either a positive or a negative effect on their immediate development.

There are so many shades of dependency theories that a number of scholars have tried to classify them. Chilcote (1981: 300) has summarized them as in Figure 1.

**Figure 1**
Approaches to Dependency

<table>
<thead>
<tr>
<th>Non-Marxist Anti-Imperialist</th>
<th>Marxist Anti-Imperialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desarrollista, Structuralist and Nationalist autonomous development (Prebisch, Furtado, and Sunkel)</td>
<td>Monopoly capitalism (Baran and Sweezy)</td>
</tr>
<tr>
<td>Internal colonialism (Gonzalez Casanova)</td>
<td>Subimperialism (Marini)</td>
</tr>
<tr>
<td>Poles of development (Andrade)</td>
<td>Capitalist development of underdevelopment (Frank, Rodney)</td>
</tr>
<tr>
<td>Dependent capitalist development (Cardoso)</td>
<td>New dependency (Dos Santos)</td>
</tr>
</tbody>
</table>

Despite the multiplicity of approaches, dependency theory remains a popular perspective among social scientists today. However there have not been many attempts to apply the theory to particular situations in the less developed countries.

c) **Imperialism**: Theories of imperialism generally relate to the activities of some dominant nations in the world. In this sense imperialism might be defined as a "relationship of effective
domination or control, political or economic, direct or indirect, of one nation over another" (Cohen, 1973: 15). As with dependency theory there are various non-Marxist and Marxist theories of imperialism. Chilcote (1981: 315) has summarized them as in Figure 2.

Figure 2
Theories of Imperialism

<table>
<thead>
<tr>
<th>Liberal</th>
<th>Radical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Marxist</td>
<td>Marxist</td>
</tr>
<tr>
<td>Domestic underconsumption (Hobson)</td>
<td>Continuous capital accumulation and penetration in primitive societies (Luxemburg)</td>
</tr>
<tr>
<td>Peaceful resolution by the capitalist class (Kautsky)</td>
<td>Finance capital (Hilferding)</td>
</tr>
<tr>
<td>Withering away of imperialism under progressive capitalism (Schumpeter)</td>
<td>Monopolies of banks and corporations in advanced stage of capitalism (Bukharin, Lenin)</td>
</tr>
<tr>
<td>Structural view of collectivities in center and periphery (Galtung)</td>
<td>Monopoly and oligopoly and impact of capital surplus (Baran and Sweezy)</td>
</tr>
<tr>
<td></td>
<td>Multinationals and U. S. expanding trade and aid (Magdoff)</td>
</tr>
</tbody>
</table>

4: Critique of Radical Theories

These three prominent themes in the literature on radical theories of development and underdevelopment, very briefly surveyed above, are dealing with social change or development at a macro-level or at the level of societies. While the concepts and propositions derived from these themes are useful in understanding social
phenomena, it is difficult to adhere exclusively to any of these theories in this study.

John G. Taylor (1979: 97) argues that "[I]n analysing third world societies, the sociology of underdevelopment uses a unilinear determinism in which all non-economic elements are analysed simply as effects of a capitalist penetration which universally blocks the development of the preexisting society." Taylor sees the sociology of underdevelopment, especially as formulated by Baran and Frank, as mere inversions of the theories of sociology of development. According to him, it is difficult to see how development would take place if only capitalist penetration would be stopped.

We shall briefly review four more areas which are relevant to our study. These are: communication and development, diffusion of innovations, health and development, and rural development.

5: Communication and Development

In 1964 Wilbur Schramm published Mass Media and Development written at the request of UNESCO. Together with Lerner (1957) and Pye (ed., 1963) it laid the groundwork for further research, both theoretical and applied in the field of communication and development. The key to national development was seen by these scholars as a rapid increase in economic productivity. Simply presented Lerner's model of development can be illustrated as in Figure 3 (Hedebro, 1982: 15).
Figure 3
Lerner's Model of Development

Increased literacy is assumed to lead to increased media exposure which in turn would stimulate economic participation—higher per capita income, and political participation—voting. While Lerner saw urbanization leading to increased literacy, McClelland (1961) saw "the need for achievement" as the crucial characteristic of modern man. Schramm (1967) felt that establishment of a wide ranging mass media system would compensate for the lack of teachers, schools and educational materials. Most of the communication scholars felt that communication was the key ingredient in development (Hedebro, 1982: 18). The problem was that their concept of development was based on the orthodox theories of development, discussed above. Thus the communication model of development came under severe attack in the seventies especially with the rise of the radical—underdevelopment, dependency, and imperialism—perspectives. Thus Everett M. Rogers (1976: 121) speaks of "Communication and Development: The Passing of the Dominant Paradigm." The new paradigm stressed the anti-development capability of mass media. Many Latin American communication scholars perceived the mass media as an extension of the
exploitative relationships with U.S.-based multinational companies especially through the advertising of commercial products.\footnote{5}

According to Rogers (1976: 129) several world events including the ecological disgust with environmental pollution resulting from rapid industrialization, the world oil crisis, the opening up of China and its lessons in development, the discouraging realization that development was not going very well in the developing countries that had closely followed the paradigm, severely undermined the credibility of the dominant paradigm. From these events grew the realization that there are many alternative pathways to development.

For Rogers (1976: 130-31) some elements in the new development paradigm would be:

1. the equality of distribution of information, socio-economic benefits--fruits of development;

2. popular participation in self-development planning and execution, usually accompanied by the decentralization of certain of these activities to the village level,

3. self reliance and independence in development, with an emphasis upon the potential of local resources, and

4. integration of traditional with modern system, so that modernization is a synchronization of old and new ideas, with the exact mixture somewhat different in each locale.

One of the most powerful analyses on communication and development is found in the writings of Paulo Freire (1970, 1972, 1973). Freire's attack on the "culture of silence" on the vast numbers of illiterate peasants in Brazil's poorest areas has contributed in an extraordinary way to the development of a sense of purpose and identity among the oppressed and demoralized majority. "Conscientization," the Freirean method of empowering the poor with
the capacity to act by making them critically aware of reality around them, is a popular tool among development communicators today.

6: Diffusion of Innovations and Development

The rise of the alternative paradigm implied that the role of communication in development must change. It was realized that the role of mass communication in facilitating development was often indirect and only contributory rather than direct and powerful. Studies showed that technological innovations spread most frequently through interpersonal communication and that structural changes had to occur first to bring about development. Diffusion of innovations was one of the most flourishing areas of communication research based on the old paradigm of development. In this kind of research, an idea perceived as new by the receiver—an innovation—is traced as it spreads through a system (Rogers with Shoemaker, 1971). The top-down flow of communication model—a major characteristic of the dominant paradigm—is evident here. A number of criticisms on the assumptions and directions of diffusion research appeared in the 1970s (Marceau, 1972; Grunig, 1971; Golding, 1974; Havens, 1972; Beltran, 1975; Diaz Bordenave, 1976; Roling et al, 1976). These critiques centred on the pro-innovation bias of such research and on the propensity for diffusion to widen the socio-economic gaps in a rural audience (Rogers, 1976: 137).

In the classical diffusion theory, adopters are classified into five groups, viz., (i) innovators (the first 2.5 percent), (ii) early adopters (the next 13.5 percent), (iii) the early majority (the next 34 percent), (iv) the late majority (the next 34 percent), and
(v) laggards (the last 16 percent). The early adopters are generally younger, have a higher social status, and are better off financially. They also have had greater mass media exposure and better contact with extension agents (Hedebro, 1982: 26-27).

The implications of diffusion of innovations by focusing on the early adopters is obvious. The socio-economically better-off will benefit first leading to increased disparities between rural classes. There is also the implicit assumption that new ideas or innovations are good for all. For example, Mamdani (1973) and Jhabvala (1984) have convincingly argued that the small family norm, considered an innovation, is not necessarily beneficial to a poor family. There are even innovations which are detrimental to poorer and illiterate people as in the case of baby food formulas (Singh, 1982). This theory is also heavily criticized for its very obvious diffusion strategy of starting with the early adopters who are the upper crust in any community. The "trickle down" strategy has become, at least politically, a risky model (Brara, 1983). Everett M. Rogers, considered the most important diffusion theorist, has taken these criticisms seriously while revising his classic Diffusion of Innovations (1962) for a second time in 1983. There are a number of important lessons learned from the vast number of diffusion studies. For example, now that we know that early adopters are most likely to be the richer upper class in a community, it should be possible to devise strategies to reach the poor or target group first (Arole, 1980) or make the innovation unpalatable to the rich or non-target group. (Kaithathara, 1981; Shingi and Mody, 1976: 95).
7: Health and Development

Our study focusses specifically on development in the area of rural health. Therefore it will be useful to discuss some of the ideas in the area of health and development.

Good health is recognized as fundamental to the entire process of development. All the theorists recognize good health as an indicator of development. As a matter of fact development can be evaluated to a great extent by measuring health indicators such as average life expectancy, infant mortality, physicians/trained health assistance per unit of population etc. As with other aspects of development, health is also an aspect under heavy criticism from development theorists. According to Ivan Illich, "medical establishment has become a major threat to health" (1976: 3). In his scathing attack on the professional control over medicine Illich raises questions about the very direction of modern society and its dependence on a maintenance system that is categorically robbing us of power, money, dignity even life itself.

Lesley Doyal (1979) emphasizes the relationship between imperialism, medicine and underdevelopment. For example, the whole medical establishment under the East India Company in Imperial India was primarily for the maintenance of a healthy military capacity in the event of inter-imperialist conflict (Doyal with Pennel, 1979: 240-41). According to Stewart Macpherson (1982: 95) it has long been recognized that the diseases of the developing countries are the diseases of poverty; poor environmental conditions, lack of clean
water, inadequate nutrition and rapid population growth allow the most widespread diseases to flourish (King, 1966; Bryant, 1969; Gish, 1977).

The many different components of good health are not always available to the majority of the rural people. In an attempt to rectify this situation, the policies of the World Health Organization and the United Nations' agencies concerned with health problems have, in recent years, been redesigned in the direction of so-called primary health care, the basic principles of which were formulated at the Alma Ata Conference in 1978:

A main social target of governments, international organizations and the world community... should be the attainment by all people of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life. Primary health care is the key to attaining this target as part of development.... which includes at least, education concerning prevailing health problems and the method of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs (World Health Organization, 1978: 3-4).

8: Rural Development

While orthodox theorists were discussing ways and means to modernize the underdeveloped countries using western models, radical theorists focussed attention on the structural factors causing underdevelopment. In the ensuing debate the plight of the developing countries with their enormous problems of poverty, hunger, malnutrition, unemployment, migration to overcrowded cities, population explosion and so on were subjected to serious study. Majority of the people in these third world countries live in the
rural areas depending basically on agriculture. This has led to the unprecedented interest in rural development. Multi-lateral aid agencies such as the World Bank (1975) published policy papers laying down strategies for rural development.

Academics such as Michael Lipton (1977) have argued that it is due to urban bias in development planning that poor people stay poor. The earlier argument about development in industrialized countries (centres or metropolises) as causing underdevelopment in the developing countries (periphery or satellites) was now applied to urban (centre of periphery) vs rural (periphery of periphery) development (Frank, 1967a; Galtung, 1971). Thus while "development" was the buzz word of the seventies, "rural development" has become the catch word of the eighties. True to fashion, theorists of all persuasions--orthodox or radical--have modified their agenda to include "rural development" in their theories (Nicholson, 1974; Desai et al 1976; Inayatullah, 1976, 1978; Rahim, 1976; Mehta, 1977; Mehta, Haq and Wignaraja, 1977; Rondinelli and Ruddle, 1978; Franda, 1979; Friedman, 1979; Alliband, 1980; Lele, 1980; Srinivas, 1980; Brara, 1983).

9: Knowledge Utilization for Rural Development

It is in this context of the current interest in rural development that this study is grounded. All the various theories of development and underdevelopment, discussed briefly above, are concerned with social change. While the orthodox theorists may be more interested in how social change or development occurs, the radical theorists stress why development takes place the way it does,
viz., why some countries develop while others stagnate. Both these aspects enhance our understanding of social change in different ways. Since a synthesis of ideas from both of these perspectives is useful in the study of rural development, we have chosen the emerging perspective known as knowledge utilization. Being comparatively new, this perspective is not tainted with labels of being orthodox or radical per se.

Knowledge utilization perspective has grown alongside diffusion of innovations theory. While "diffusion" implies a trickle-down and one-way process, knowledge utilization does not imply either. Anybody can be the source of knowledge. It can be the villager who has some clear ideas about reality around him which may be useful to a scientist. He or she may not take it upon himself to diffuse it, but would not mind sharing it. She may also have some non-positive knowledge which is harmful. Take for example the practice of applying cowdung to the umbilical cord of a newborn baby. She would benefit from learning about the deadly effects of this non-positive knowledge.

Even though it is a relatively new perspective, there are a number of models offered by scholars. Peter M. Meehan and George M. Beal (1977) have attempted to summarize the various models and have proposed a general model of their own. Ronald Havelock, considered a pioneer in this field, after reviewing 4,000 articles dealing with social change, delineated three perspectives which underlay research, development and utilization as a distinct field of study (Meehan and Beal, 1977: 9-10).
First, the Research, Development, and Dissemination (RD&D) Perspective emphasizes the logical flow of scientific research from the research laboratory or university to developers for conversion into technologies which are then disseminated or marketed to consumers. Second, the Social Interaction Perspective, derived largely from the diffusion/adoption-of-innovation literature, emphasizes the importance of social relations and reference groups which affect individual user's adoption of products. Thirdly, the Problem-Solving Perspective draws largely from human relations/group dynamics literature and assumes that "knowledge-utilization is a part, and only a part, of a problem-solving process inside the user which begins with a need and ends with the satisfaction of that need" (Havelock, 1969: 10-55).

Meehan and Beal (1977: 11-19) also identify a number of theoretical approaches to knowledge utilization. Havelock integrates the RD&D, Social Interaction, and Problem-Solving perspectives into a single "linkage model" of knowledge production and utilization:

Linkage is seen as a series of two-way interaction processes which connect user-systems with various resource systems, including basic and applied research, development, and practice.... Hence, the resource systems must appreciate the users' internal needs and problem-solving patterns, and the user in turn, must be able to appreciate the invention, solution-formation, and evaluation processes of resource systems.... These trust relationships can over time, become channels for the rapid, effective and efficient transfer of information (Havelock, 1969: 11-15).

The linkage model stresses the need for mutual understanding of needs and problem-solving dialogue between resource-systems and users as key to knowledge utilization. Guba and Clark's "configurational perspective" (1975) emphasizes structural and processual elements of knowledge production and utilization (Figure 4). This model consists of four basic stages—research, development, diffusion, and adoption—and each stage includes at least three steps.
After criticizing the configurational perspective for being linear, Gideonse (1968) presented a model which emphasizes the iterative character of knowledge production and utilization. He holds that knowledge and its products may move back and forth from one step or stage to another rather than always flow smoothly from one end of the utilization chain to the other.

Figure 4

The Clark-Guba Model of Knowledge Production and Utilization

<table>
<thead>
<tr>
<th>RESEARCH</th>
<th>DEVELOPMENT</th>
<th>DIFFUSION</th>
<th>ADOPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depict</td>
<td>Depict</td>
<td>Tell</td>
<td>Try-test</td>
</tr>
<tr>
<td>Relate</td>
<td>Invent</td>
<td>Show</td>
<td>Install</td>
</tr>
<tr>
<td>Conceptualize</td>
<td>Fabricate</td>
<td>Help</td>
<td>Institutionalize</td>
</tr>
<tr>
<td>Test</td>
<td>Test</td>
<td>Intervene</td>
<td>Train</td>
</tr>
</tbody>
</table>

Meehan and Beal (1977) present their "general model" after reviewing the merits and demerits of the linkage, configurational and the iterative perspectives of knowledge production and utilization. They identify six stages in the process. These are:

(i) Knowledge-production,
(ii) Knowledge-management,
(iii) Knowledge-translation,
(iv) Product-development,
(v) Product-dissemination, and
(vi) Product- adoption/ diffusion.
Knowledge-Production consists essentially of the process of depicting and testing relationships among and between selected variables and then communicating results of these tests to relevant audiences. Meehan and Beal (1977: 22) also distinguish between basic and applied research. In the knowledge-management stage the outputs of the first stage are collected, stored and sorted.

Knowledge-translation involves converting scientific knowledge into a form useful for product development. Technical knowledge produced in the translation stage is then utilized to create technologies in the product-development stage.

Following development, products are disseminated to clients or ultimate users in the product-dissemination stage. Guba describes dissemination as "the creation of awareness about new developments and the provision of opportunities for their assessment" by users (1968: 42). Kotler and Zaltman advocate a "social marketing" approach. Here, "most of the effort is spent on discovering the wants of target audiences and the creation of goods and services to satisfy them" (Kotler and Zaltman, 1971: 5).

Product-adoption/utilization consists of the process by which clients discover problems, locate solutions to the problems, and assimilate solutions into their existing systems. Meehan and Beal (1977: 28-76) go on to discuss various steps involved in each of these stages in an attempt to be comprehensive.

10: Knowledge Utilization as Planned Social Change

According to Gerald Zaltman (1979: 83) planned social change can be viewed as knowledge utilization:
Rogers (1973) refers to social change as an alteration in the structure and functioning of a social system brought about by an innovation. Zaltman and Duncan (1977) refer to change in terms of relearning. In either case, the use of knowledge may affect the structure and functioning of a social system and involve relearning. When this occurs, the knowledge utilization process may be validly viewed as a social change process. The effective transfer of knowledge from one person or agency to another is an instance of innovation adoption and diffusion. As knowledge and its use diffuse through a population, social change may occur. Thus, many instances of intended knowledge utilization are instances of planned social change.

Our study focuses on planned social change. Therefore it was felt that the stages would be better understood in terms of processes of planned social change. We study the process of knowledge utilization in implementing rural health programs by two organizations in India. For purposes of this study, we have taken the six-stage model outlined by Meehan and Beal and have modified it. We conceptualize the whole process as having the following six stages corresponding to the stages in the Meehan-Beal model:

(i) Knowledge production - Problem identification
(ii) Knowledge management - Problem definition
(iii) Knowledge translation - Problem specification
(iv) Product development - Program formulation
(v) Product dissemination - Program implementation
(vi) Product adoption - Program evaluation

We can talk of two aspects of a social structure, i.e., traditional and modern. In planned development, some parts of these structures will have to be changed. We may represent this as in Figure 5.
The aim of planned development must be to promote traditional and modern aspects of social structure which are positive while removing non-positive features of traditional and modern social structure. 

Suttee, where a widow would be required to jump to death in the funeral pyre of her husband in traditional India, would be a non-positive aspect of traditional social structure, while dowry is a modern non-positive aspect of the Indian social system. Similarly caring for the elderly is a positive feature of the traditional Indian society while equality of women is a positive modern feature.
In the same fashion we can conceptualize knowledge to be traditional and modern as well as non-positive and positive (Zaltman, 1979: 86). Applying the same logic as in the case of social structure we can represent knowledge as in Figure 6. If we take examples of knowledge utilization from the area of health care, using unsterilized instruments for conducting delivery is an example of non-positive traditional knowledge, while taking drugs for every illness is an example of modern non-positive knowledge. Similarly breast-feeding babies is a traditional positive knowledge, while immunizations for children is a positive modern knowledge.

In order to more fully depict the iterative nature of the knowledge utilization system, which we think is important in the study of planned social change, we have designed the following model represented in Figure 7. Our model identifies the various actors involved in the knowledge utilization system as well as the primary process that takes place within and between the two stages. As we shall discuss later there would be much overlap among these stages and one person may assume more than one role.

We have conceptualized the knowledge utilization system as starting with the problem identification stage wherein researchers analyse and explain phenomena and thus generate new knowledge. This may also arise out of an evaluation of an existing policy or program.
Figure 7
Knowledge Utilization System--Stages, ACTION, [Actors]
Research knowledge is useful for planned change only when politicians, who are the policy makers, seize it and take it upon themselves to articulate it. We call it legitimation. Problems are articulated and given attention to when politicians perceive them as legitimate issues to be attended to. Unless they appropriate funds planned development projects cannot start.

Politicians and policy makers are often not technical experts in a problem area. Once they take up a problem they need technical experts to work out details of a problem often in quantifiable and measurable terms. Various scenarios can be worked out by the experts from which the most acceptable is selected by the policy makers for implementation.

Once goals and targets are set there has to be a change agency which will formulate programs to achieve them. Change agency must work out detailed priorities and areas of action as well as allocation of funds, selection and training of change agents and management. Change agents are the ones who implement the actual programs. They may be employees of the change agency or volunteers from among the clients. Their activity can be termed as diffusion. They are the ones in immediate contact with the clients or adopters, unless the change agency was using a mass medium such as television, radio, or newspaper as the change agent.

The final stage is program adoption where clients either utilize the new program or reject it. Success of any knowledge utilization or planned development program depends on the rate of utilization or adoption by the clients. Very often programs are considered
successful at the stage of program formulation or even earlier. Usually a committee is appointed to study a problem. Upon submission of a much delayed report with recommendations, problems are thought to be solved. Sometimes the urgency of the problem has been overshadowed by some new incident or issue. At other times a change agency is created to deal with a problem and then the problem is forgotten.

Finally any planned development program must be evaluated to measure the degree of effectiveness. Project evaluation is one of the neglected areas in knowledge utilization projects. Successful projects usually have an inbuilt evaluation mechanism. Often new issues and problems claim attention and older programs which are thought to be unsuccessful are ignored or dropped without evaluating reasons for failure. There is also the tendency to "re-christen" old programs to make them appear new and relevant. This usually happens when new political parties gain governmental power or when new bureaucrats or administrators take charge.

While analyzing the historical evolution of a program such as rural health care in India these points will be relevant. A stage-wise analysis will also help in identifying historical evolution of the various policies and programs. We shall follow this schema of knowledge utilization systems in Chapter IV where we shall discuss the rural health care system in India in a historical perspective, in Chapter V in the analysis of a district level health care system and in Chapter VI in the study of a voluntary health care organization.
Figure 8
Knowledge Utilization for Rural Development--Theoretical Model

Research Knowledge → Policy Maker Perspective → Policy Maker Actions

Technical Expert Recommendations

Change Agent Perspective

Social Environment

RURAL DEVELOPMENT

KNOWLEDGE UTILIZATION EFFECTIVENESS

Adopter Perspective → Adopter Behavior
One of the criticisms raised against the knowledge utilization perspective is that the environmental aspect has been ignored. Wimal Dissanayake (1982) argues for a hermeneutical approach to knowledge utilization where environment would be given adequate consideration. We have taken care of this in our conceptual model developed for purposes of analysis and interpretation of data to show linkages among the variables in knowledge utilization. This will help us to understand the effectiveness of the two organizations under closer scrutiny in this study. The hypothesized relationships among the variables are depicted by the arrows as presented in Figure 8.8

C. Hypotheses

Having reviewed the theoretical context briefly we shall now delineate a number of hypotheses that will be tested in our study.

1. The greater the utilization of positive knowledge in program implementation, the greater the rural development.

2. The more closed the structure of a social system is, the less the impact of modern knowledge on that system.

3. A change agency headed by a charismatic leader is more effective in program implementation than a change agency headed by a bureaucratic leader.

4. A change agent who is homophilous with his/her clients on variables relevant to the situation is more effective than a change agent who is heterophilous (Rogers, 1973: 128).

5. A change agent who has both competence and safety credibility will be more effective than a change agent with competence or safety credibility only (Rogers, 1973: 126).
6. The greater the legitimation of change agents by system leaders, the greater the impact of change agents in knowledge utilization (Dissanayake, 1982: 14).

7. Innovations based on ideas borrowed from the clients will be more readily accepted than innovations based on imported ideas (Arensberg and Niehoff, 1971: 175; Dissanayake, 1982: 17).

8. Involvement of clients from the early stages of a knowledge utilization system, rather than involving clients only in implementation, will increase popular participation and knowledge utilization (Arensberg and Niehoff, 1971: 174; Dissanayake, 1982).

9. Incremental innovations are more easily adopted than preventive innovations (Zaltman, 1979: 89).

10. Innovations differentiated for target groups among clients/adopters will be more easily adopted than undifferentiated innovations where clients form distinct classes or groups (Zaltman, 1979: 90).

11. Projects where channels of communication are established by change agents which provide an efficient two-way flow of information and particularly including feedback channels are more effective than projects with one-way channels of communication (Arensberg and Niehoff, 1971: 174).

In Chapter VII we shall make a comparative evaluation of the two organizations checking whether the data we have presented support the hypotheses based on the review of literature and our conceptual model of empirical relationships.
Notes to Chapter II


2. The concept of "sanskritization," as formulated by M. N. Srinivas (1952, 1969) to explain social change in India, is at best adequate to understand changes in the ritual behavior among lower castes. Srinivas' critics claim that the concept is but an instance of Merton's (1957: 233) reference group theory.

3. Western education and the extensive railroad network introduced by the British in India to facilitate administration and trade probably helped to unify Indians to fight for independence.


5. The case of the Nestle Corporation in the promotion of infant food formula is well known.

6. Everett M. Rogers (1983) reports over 600 diffusion studies on family planning in India alone.


Chapter III

METHODOLOGY

In this chapter we discuss the methodology used in the formulation, data collection, data analysis and writing of this study. We shall first of all define the terms we are using in this study. Second we shall operationalize the variables. Third we shall operationalize the hypotheses we have advanced in Chapter II after reviewing the theoretical context, and point out what kind of data we were looking for to support the hypotheses. Fourth we shall discuss the actual data collection in the field. Finally we shall explain the process of data management and analysis.

A. Definition of Terms

A number of terms used in this study need to be defined to clarify as to what we mean by them. These are knowledge utilization, rural development, government health care system, and voluntary health care organization.

1. Knowledge Utilization

The process of knowledge utilization as a social change process in which the use of knowledge affects the structure and function of a social system was discussed in chapter II (pp. 35-44). Instead of the six stages of the process which comprise of the general model by Meehan and Beal (1977) we refer to the model related to planned social change which we have developed. Its six stages are: problem
identification, problem definition, problem specification, program formulation, program implementation, and program adoption.

2. Rural Development

Rural Development refers to development that is specially focussed on rural areas which have been generally neglected in the past. We define development as a process of planned change which involves "expanding capacity to determine one's future" with attention paid to distributional issues and empowerment of the poor based on sustainability and interdependence (Bryant and White, 1982: 14-18). Rogers (1976: 133) has tried to take care of all the criticisms against the old paradigm in defining development as a "widely participatory process of social change in a society, intended to bring about social and material advancement, (including greater equality, freedom, and other valued qualities) for the majority of the people through their gaining greater control over their environment." As Freire's Pedagogy of the Oppressed (1972) testifies, participation in social change can assume revolutionary proportions.

3. Government Health Care System

In this study we analyse the efforts of the Government of India to deliver health care services to the rural people. We treat this system as a knowledge utilization system as defined above.

4. Voluntary Health Care Organization

We also studied the efforts of a not-for-profit organization to deliver health care services in a rural area. We treat this organization also as a knowledge utilization system in the same
fashion as the government health care system for purposes of comparison.

Terms used in the hypotheses that need definition will be defined while operationalizing them in the next section.

B. Operationalization of Variables

There are ten variables under consideration in this study. Knowledge utilization effectiveness which ultimately is the indicator of rural development is the dependent variable. The nine independent variables which contribute to knowledge utilization effectiveness are: research knowledge, policy maker perspective, policy maker actions, technical expert recommendations, change agency perspective, change agent behavior, social environment, adopter perspective, and adopter behavior.

1. Research knowledge

Research knowledge refers to all the scientific knowledge accumulated so far regarding health care and related areas including social structure, epidemiology, population and family planning, nutrition, maternal and child health, communicable diseases, attitude towards health and disease, drugs and systems of medicine, political economy of health and so on. This list is not exhaustive. Numerous studies are being undertaken by Indian and foreign scholars into these aspects using various perspectives. A good understanding of all these areas is essential for effective knowledge utilization.

2. Policy maker perspective

Policy maker perspective is important in the study of any knowledge utilization system. Despite the availability of much
knowledge based on research, it is the ideology or perspective of the policy maker who is often an elected official that will make things happen. Sometimes with the change of elected officials policies are also changed drastically. Compulsion in family planning is one such case in India as we shall discuss later.

3. **Policy maker actions**

Policy maker actions would follow policy maker perspective. Often promises are made during election campaigns to gain votes and actions are difficult to take.

4. **Technical expert recommendations**

Technical expert recommendations are sought to translate policy maker actions into targets and programs. Often the policy makers are not experts in the field in their charge and have to seek the expertise of the technical personnel for feasible programs.

5. **Change agency perspective**

Change agency perspective is important in any program implementation. The change agency may not be in full sympathy with the policy maker perspective or the technical expert recommendations. In such cases effectiveness will be minimal. Thus often new change agencies are created to deal with new program implementation. It is more difficult to change the perspective of the established change agencies than creating new agencies.

6. **Change agent behavior**

Change agent behavior is most crucial in knowledge utilization. According to Rogers (1973: 82) "a change agent is a professional who influences innovation-decisions in a direction that he feels
desirable. He usually seeks to obtain the adoption of new ideas, but he may also attempt to slow down diffusion and prevent the adoption of innovations that he feels are undesirable. The change agent could be an employee of the change agency or be a volunteer selected from the community of adopters.

7. **Social environment**

Social environment refers to the social system within which the knowledge utilization takes place. A clear understanding of the social structure within which planned change is being undertaken is essential for effectiveness. Many planned change programs fail due to inadequate attention being paid to the social environment. Many innovations are borrowed from foreign countries or are planned in boardrooms in metropolitan centres to be implemented in rural areas with little consideration to the needs of the clients. This has been one of the persistent criticisms of development strategies of the recent past. Often local environmental factors have caused innovations which were developed for another society, to be redundant or impracticable. For example, baby foods may not reduce infant malnutrition if the drinking water is contaminated. Or training more medical doctors will not solve rural health problems if these doctors will not live and work in rural areas or the poor people cannot afford the bus fare to come to the hospital.

8. **Adopter perspective**

Adopter perspective must be considered in any knowledge utilization study. Adopters have their own ideas about what is good and what is bad for them. Under the circumstances they may be making
the best decision. For agricultural laborers "one mouth is also two hands" (Jhabvala, 1983). Thus a large family is not necessarily disadvantageous to a landless laborer in the long run especially in the event of high infant mortality.

9. Adopter actions

Adopter actions will ultimately decide the degree of effectiveness of any knowledge utilization system. This will be directly influenced by adopter perspective, change agent actions, social environment, and policy maker actions.

10. Knowledge utilization effectiveness

Knowledge utilization effectiveness is the dependent variable in this study. We have hypothesized that effective knowledge utilization will lead to rural development. In this study of two health care systems data on knowledge utilization effectiveness are made up of the following:

(a) health improvement of people under the respective systems which can be measured by changes in the rates of: infant mortality, maternal mortality, family planning effectiveness, percentage of patients treated at home as against those treated in the hospitals, and number of immunizations;

(b) community involvement as evidenced by: active mothers' clubs, young farmers' clubs, selection process of health workers; and

(c) related community development activities such as animal husbandary, social forestry, rehabilitation, and adult education.
C. Operationalization of Hypotheses

In order to test the propositions we have formulated in Chapter Two we must now operationalize them and show what kind of data are needed to support them.

Hypothesis One

The greater the coherence among the various stages of the knowledge utilization system, the greater the rural development. This proposition needs to be elaborated in order to operationalize it. The activities of these organizations, primarily in the area of health care have brought about some rural development. The overall health status of the community is one indicator. Other specific changes which are indicators of overall change include: improvement in the status of women; participation of villagers in the decision making processes; initiation of economic activities; fight against social evils such as dowry, alcoholism, suppression of women and low castes. Thus it is possible to establish which one of the organizations is more effective in contributing to rural development. We have to also establish that the various stages in the knowledge utilization system are more coherent in one than the other. We must look for discrepancies among the different independent variables to support this. There may be lack of communication or coordination between the various stages and actors involved. The change agent may not be able to communicate effectively with the adopters. The adopters may not want the program, it may not be their priority or they may be hostile to it. The change agency may be too highhanded or unsympathetic to the adopters' perspectives and needs.
Hypothesis Two

The more closed the structure of a social system, the less the impact of modern knowledge on that system.

This proposition tries to explain the differential impact of knowledge utilization in different areas. It is quite common to notice very remarkable changes in one village due to a program while another village has hardly been affected by the same program. We hypothesize that village social structure is the crucial variable here. Some villages, due to various factors—an enlightened leader, higher literacy, dedicated change agent—make significant gains. Thus even if one organization has had overall impact, it will not be uniform throughout the project area. We are treating village communities as social systems. In another sense the two organizations themselves can be considered as social systems and the proposition applied to them.

Hypothesis Three

A change agency headed by a charismatic leader is more effective in program implementation than a change agency headed by a bureaucratic leader.

Here we are using the classical Weberian ideal type of leadership styles, viz., charismatic vs bureaucratic. Weberian logic would suggest that a leader with a bureaucratic—orderly, efficient, modern, with clear cut delineation of authority—style of functioning would be more effective than a charismatic or traditional leader who functions more by his personal talents and rapport with the clients. In the case of leadership of knowledge utilization systems in health care in rural India, we hypothesize that a charismatic leader with some
traditional traits would be more successful because the rural social system is still traditional and slow to accept change. In our study the two contrasting styles of leadership are almost self evident with the government system set up in the bureaucratic pattern and the voluntary organization headed by a couple who are charismatic in their approach and dedication with some family roots in the region.

**Hypothesis Four**

A change agent who is homophilous with the adopters on variables relevant to the situation is more effective than a change agent who is heterophilous (Rogers, 1973: 128).

Homophily is the degree to which a source-receiver pair are similar in certain attributes, like beliefs, education, social status etc. (Rogers, 1973: 51). Heterophily is the degree to which a source-receiver pair are different in certain attributes (Rogers, 1973: 52). Change agent homophily and heterophily have been discussed in detail as critical variables in diffusion of family planning innovations by Everett Rogers (1973).

A change agent need not be homophilous with the adopters on all variables. Too much homophily made the traditional district ineffective change agent in family planning in India and Pakistan (Rogers and Solomon, 1975: 27). Similarly outsiders as change agents have been largely unsuccessful in many instances in community development programs in India. It is important to find out what the relevant variables are on which homophily would help. Will a school teacher be a good family planning adviser? Will the young high school graduate daughter of the village sarpanch be a good health worker? We
will look for data to see whether change agents are homophilous or heterophilous and on what variables. We will check the factual data on change agents as to their socio-economic status, adopters' evaluation of their effectiveness etc.

**Hypothesis Five**

A change agent who has both competence and safety credibility will be more effective than a change agent with competence or safety credibility only (Rogers, 1973: 126).

This proposition goes in conjunction with the previous one. Two crucial characteristics leading to change agent effectiveness are competence credibility and safety credibility. **Credibility** is defined as a degree to which a communication source or channel is perceived as trustworthy and competent. **Competence credibility** refers to the technical expertise a change agent has while **safety credibility** is analogous to trustworthiness (Rogers, 1973: 123).

A trained auxiliary-nurse-midwife has competence credibility because she is knowledgeable and experienced. But she may lack safety credibility. Being an outsider, educated, city-bred and modern she may not be trusted by the village women. On the contrary, a local woman--illiterate, middle-aged, with own children, having undergone tubectomy--trained as a health worker may be trusted as a family planning adviser. However she may not have competence credibility if she were to distribute medicines and give injections.

**Hypothesis Six**

The greater the legitimation of change agents by system leaders, the greater the impact of change agents in knowledge utilization (Dissanayake, 1982: 14).
If the local leaders endorse and help with the activities of the change agent she is likely to be more effective. If the change agent is seen as another low level government functionary, she may be bullied by local leaders. Participation of system leaders in the selection of change agents would increase chances of legitimation by them.

**Hypothesis Seven**

Innovation based on ideas borrowed from the adopters will be more readily accepted than innovations based on imported ideas (Arensberg and Niehoff, 1971: 175; Dissanayake, 1982: 17).

While knowledge is not the monopoly of any one section of society, it may be unequally shared. The adopters usually have some good ideas about what they want. What they may not know is how to accomplish it or they may lack the finances to do it themselves. They may not know that they are eligible for grants, subsidies or loans or how to obtain these. So if a change agency and change agent is willing to work with them rather than tell them what is good or bad for them, they may be more readily accepted.

**Hypothesis Eight**

Involvement of adopters from the early stages of knowledge utilization system, rather than involving adopters only in implementation will increase popular participation and knowledge utilization (Arensberg and Niehoff, 1971: 174; Dissanayake, 1982: 17).

Often adopters are expected merely to accept or reject a program or innovation. If they are involved right from the beginning of
problem identification onwards, they would have the sense of doing it themselves and will be more eager to adopt. This has been called "grass roots planning," "bottom-up planning" and so on. However, participation is an overused term in current rural development manuals.

**Hypothesis Nine**

Incremental innovations are more easily adopted than preventive innovations (Zaltman, 1979: 89).

Providing medicine to cure an illness is an incremental innovation while taking immunizations to prevent childhood diseases is a preventive innovation. If only the latter is provided, there will be less enthusiasm among the clients to adopt them. Successful programs will therefore be those which have both incremental and preventive innovations.

**Hypothesis Ten**

Innovations differentiated for target groups among adopters will be more easily adopted than undifferentiated innovations where adopters form distinct classes or groups (Zaltman, 1979: 90).

It will be more effective to identify specific target groups than try to tailor innovations for everybody. For example maternal and child health classes would be better attended in the evening by working mothers than during the day when it may be more convenient for the change agent and non-working mothers. Alternatively separate classes could be conducted for these two types of target groups because their problems may be different.
Hypothesis Eleven

Projects where channels of communication are established by change agents which provide an efficient two-way flow of information and particularly including feedback channels are more effective than projects with one-way channels of communication (Arensberg and Niehoff, 1971: 174).

A face-to-face two way communication system may be more effective than a mass media approach especially when clients are poor and illiterate.

D. The Case Study Method

The resources available for data collection necessitated that a most cost effective methodology be employed in the study. Also as two organizations were the basic units of comparative analysis, it was decided that a case study approach would be suitable to the objectives of the study. There is basically one system of health care delivery followed by the Government of India. However health care is a responsibility of the state governments and therefore the quality and impact of these services vary from state to state. Moreover various regions within a state are unevenly developed resulting in great differences in the health care delivery system.

In the same manner there are hundreds of voluntary organizations, large and small, engaged in providing various types of health care services in urban and rural areas of India. A large number of hospitals in the country are run by private (for-profit) and voluntary (not-for-profit) organizations. Therefore, as far as
generalizability of findings was concerned, selecting any organization was going to be a questionable decision. But in the absence of any comparable study of this nature it was felt that a beginning, however small, had to be made within the resources available and the scope of the study.

First of all, it was decided that the Comprehensive Rural Health Project at Jamkhed, Ahmednagar district, Maharashtra state would be the case study of the voluntary health care organization. The researcher had done some preliminary studies of this project in 1978-79. It was felt that the previous acquaintance with the project directors and some of the workers of the project would facilitate data collection as well as reliability and validity of data. This project had also, in the meantime, become internationally famous especially after the project directors were awarded the prestigious Ramon Magsaysay award for community leadership in 1979. We shall later discuss how this fact of international fame actually did create some problems for this researcher.

It has been originally planned to select as the government system to be studied a district adjacent to Ahmednagar where the Jamkhed project is located. Upon reaching India it became obvious that selecting another district would create logistical difficulties for the study. Selecting a comparable district would have been difficult as well since Ahmednagar has been a chronically drought prone area for a number of years. As the Jamkhed project was originally active only in the Jamkhed taluka, it was felt that selecting another taluka in the same district would make comparability easier. In any case, the
government health care delivery system is based on a primary health center at the taluka level even though district is the administrative unit for the health department of the state.

Inevitably there are some overlaps such as the government administration having jurisdiction over the Jamkhed project area as well as having a primary health center in the region although in this case it is 25 kilometers away from the headquarters of the project. Similarly patients from all over the district and beyond utilize the curative services available at the headquarters of the Jamkhed project. Most recently the Government of Maharashtra has selected the Ahmednagar district for implementing its Health Guides program with special inputs and the Jamkhed project directors have been drafted to train these health guides. Thus it is not possible to treat these two cases as mutually exclusive and independent. Such overlap may be found in any region unless we select the cases from geographically distant regions. However, we shall later see that these overlaps help us understand the two cases in better comparative light than two completely different systems.

E. Field Research

Field research was carried out in India between August 1982 and January 1983. First of all some library research was undertaken in Poona, Bombay, and New Delhi. This familiarised the researcher with the current research and scholarship in the field of rural health care and rural development. At the same time letters were written to a number of voluntary organizations primarily engaged in rural health
care in various parts of India, requesting their program reports, brochures and other material. Materials obtained through this correspondence were very useful in gaining a general impression of the work of voluntary organizations in this field.²

Most of the government documents relating to the work of the health department at the national and state level were obtained through friends and other professional acquaintances. It was very frustrating often to try to obtain government publications for professional use. Either they were not for sale and hence not available in bookstores or they were out of stock. It was virtually impossible to sit down in a library which is open during office hours only and copy various materials as no photocopying facilities are available in Indian research libraries, at least in the ones the researcher visited.

1. District Health Care System

Obtaining permission from the government authorities to study a district health care system was not a difficult task. This again was accomplished through professional network. The Assistant Director of Health Services, Maharashtra State telephoned the District Health Officer of Ahmednagar and permission was granted. The District Health Officer in turn wrote a memo to the Chief Medical Officer of the Primary Health Centre at Tisgaon in Pathardi taluka which we selected for the detailed study.

As the researcher is not fluent in Marathi--the local language--a local college student was recruited as interpreter and research assistant. The fact that he belonged to the same district and knew a
lot of local officials was a blessing in disguise as the study progressed. It so happened that he belonged to a harijan caste. Later while interviewing health workers and other workers this proved to be another advantageous coincidence since a large number of them were harijans.\footnote{3} Being poor and exploited they do not easily open up to educated and urban looking researchers or government officials. At the same time we had to guard against getting too involved with the subjects of our study to eliminate undue subjectivity. A few times the interpreter had to be slightly cautioned not to become a preacher to his own people.

Government officers and other functionaries were very cordial and cooperative throughout the study except in one instance. The taluka office at Pathardi would not give us the 1981 census figures which were not yet published. The tehsildar was away when we visited his office. The deputy tehsildar, who had recently taken charge, was friendly and asked the statistician to give me the two pages of typed data we needed. We were willing to sit down and copy it out. After sometime the statistician informed the deputy tehsildar that unpublished census figures could not be given to us as they were already sent for publication to the district headquarters. Upon pointing out that census data is not sensitive data to be protected and that they were easily available in foreign libraries and so on, we were asked to return when the tehsildar would be available. After two days when we returned to the taluka office the tehsildar was very apologetic about the unpleasantness and gave us the file copy which we originally wanted to copy down. It seemed that the staff was not very
happy to comply with the orders from the deputy, who is a newcomer, while the tehsildar was away.

In contrast the tehsildar at Jamkhed had carbon copies made of the summary census figures of his taluka for researchers who visit his office for the data. The difference in these two offices of the same government was that Jamkhed had been studied by a number of national and international researchers and the tehsildar was familiar with needs of researchers. Whereas in the Pathardi case, we were probably the first non-governmental persons asking for such data.

As the study was intended to get a full picture of the government health care system at the district level, we wanted to discuss with the officers at the district, taluka and block, primary health center and selected number of villages. The first time we visited the district health department the health officer was too busy with his routine jobs. Later it transpired that he was getting promoted and hence leaving the position shortly. After hearing a brief summary of the objectives of my study he felt that it was rather difficult to compare the government system with a voluntary organization as the government did not have as much funding as the voluntary organization. We assured him that our interest was in seeing how health care is being delivered and not how much money was at stake. He directed us to the Assistant District Health Officer, who was soon to succeed him. A copy of the research proposal was given to him. He promised to read it and give his opinion.

Two days later, after we had waited for a number of hours, he returned the proposal with the comment that he would like to see the
findings of the study. He wrote a memo to the Chief Medical Officer, Tisgaon Primary Health Centre to extend us all help during our study. We could not get time to interview him at length then as he was busy. The next time we were to interview him he had to go to a village. He was willing to talk to us only if we would travel with him that night. As we had made arrangements to leave town that evening, we could not accept that offer. Finally we interviewed him at length almost at the end of the field study. In some ways this was useful because we could clarify some issues that had become important as the study progressed. This description of how the data was collected is important for purposes of explaining the data collection process in a study of this nature.

The first place we visited was an Eye Camp at Kharvandi village in Pathardi taluka which falls under the jurisdiction of the Tisgaon primary health center (PHC). We were invited to travel with the doctors from Ahmednagar going to the camp which was about forty kilometres away. We waited from eleven in the morning till four in the afternoon for the government vehicle to be ready for departure. We reached the site at about five thirty in the evening. The patients had come in the morning from villages around Kharvandi as the camp was to begin before noon. According to some of the paramedical staff, a number of patients left for home as nothing was happening and that was a normal occurrence at camps of this sort. Health workers, nurses, leprosy technicians and health guides from the neighboring region had come to help with the camp. One of the high school classrooms was converted into an operation room and another into a recovery room.
The four doctors present checked the patients of whom twenty five were selected for cataract operation. Operations were conducted using flash lights.

It was a good opportunity for us to see how these camps are conducted. We were also lucky to be able to interview a large number of health care personnel from different parts of the taluka which would have been impossible without visiting many remote areas something nonfeasible according to our research plans. The persons we interviewed well into the night were all cooperative and forthcoming in their observations. Each interview was recorded on tape cassettes. This allowed us to interview a large number of our sample in a short time often without adequate light to write down if we had to. The interviewees were less intimidated by an unobtrusive taperecorder than the researcher trying to take down notes. We were also able to maintain greater rapport with the interviewees not having to write down everything. Notes were made of nonverbal expressions and observations. By the time all the operations were conducted and everyone had dinner it was past one o'clock in the morning. This also shows that these doctors and other health care personnel have to work under difficult circumstances without extra compensation.

In the next two weeks we visited four different villages and three health care facilities. More details of these are presented in the case study of government health care system (Chapter V). Overall the people whom we interviewed were very cooperative and wanted to be seen in a good light. They were willing to acknowledge that there were difficulties and problems but that they were all trying their
very best to do their job. Many of them felt privileged to be subject of a study carried out by a scholar from abroad and that their answers were being recorded for further use. Some of them seemed to believe that their answers would be used to produce some radio show maybe because a taperecorder resembles a radio which is familiar in rural India. Many were delighted to hear themselves played back. Of all the interviewees only one government official asked not to be tape recorded.

As we did not have unlimited supply of cassette tapes, interviews were transcribed the same night or the next day. Only selected interviews were transcribed verbatim as many of the answers were similar. The interviewees talked mostly in Marathi. Only three doctors talked in English. Each was asked to speak the language in which they felt most comfortable. The researcher is not fluent in Marathi but understands Hindi well. The interpreter/assistant was very fluent in Marathi and Hindi and had fairly good command of English. Therefore the interpreter translated most of the interviews into Hindi and the researcher wrote them down in English. In this three way process some of the nuances of the local expressions may have been lost or captured only partially.

2: Jamkhed Project

Even though the researcher had undertaken some preliminary studies of the Comprehensive Rural Health Project at Jamkhed in 1978-79, permission had to be obtained from the project directors to carry out this study. Much background material on the project was collected from the the files maintained at the offices of the
Voluntary Health Association of India in New Delhi. Upon informing the project directors of the intention to carry out a study, the researcher was invited to visit Jamkhed and discuss the proposal with the project directors. Initially there was some reluctance on their part to permit this study as there had been a number of studies of this project carried out by national and international researchers individually and in teams.

We were told that the people in the villages under the project were becoming rather tired of so many social scientists descending upon them every now and then with bulky questionnaires and sample survey. It was mentioned that a group of students from a prestigious foreign university was insistent upon interviewing a new bride in one of the villages. The villagers were enraged and were on the verge of physical violence upon which the project directors had to cancel the whole study. Besides the region has been chronically drought prone and the villagers eke out a living by working on rehabilitation projects which often pay "food for work." Zealous researchers take their time interviewing without realizing that the hungry man does not gain anything from these studies at least as far he is immediately concerned. Only after promising that no lengthy questionnaire would be used in interviewing and conceding that the study indeed was of immediate relevance only to the researcher would the project directors grant permission for the study. Perhaps they were also trying to measure the commitment of the researcher to the study. Once permission was granted the project directors and the staff were very cooperative in helping with the study with interviews and logistical
support. More details on the methodology of choosing the sample villages and interviewees is presented in Chapter six where the project is discussed as a case study.

F. Data Management and Analysis

A short interview guide was used for each category of respondents. Most of the interviews were conducted in Marathi and the rest in English. All the interviews were tape-recorded. Selected interviews from each category of interviewees were translated verbatim. Other interviews were summarized according to type of answers.

A code book was prepared to classify the interview data. All the interview data were then coded and stored ready for easy retrieval to be used in the analysis and writing of the report. Chapters V, VI and VII will present relevant findings in the form of quotes, summaries, and tables.

As the number of interviews is not large, quantitative analysis is not attempted with the interview data. Some of the secondary data available on the two organizations are presented in appropriate format.
Notes to Chapter III

1. A glossary of Indian vernacular terms and abbreviations used in the study is given in Appendix A.

2. A list of organizations and individuals who responded by providing secondary data is given in Appendix B.

3. A list of people interviewed in Ahmednagar district and Pathardi is presented in Appendix C.

4. "Food for Work Programme" is a Government program to provide work for villagers when there is a natural calamity such as drought, famine, flood etc.

5. A list of people interviewed in Jamkhed and surrounding villages is presented in Appendix D.

6. See Appendix E. for Interview Guides.

7. See Appendix F. for Codebook.
Chapter IV

HEALTH CARE SYSTEM IN INDIA: A HISTORICAL ANALYSIS

A historical overview of the health care delivery system as a knowledge utilization system in India will be appropriate before entering into the two case studies we conducted. We shall discuss in some detail the development of health care systems in India for the past forty years. In this discussion we shall follow the knowledge utilization model consisting of the six-stages of: problem identification, problem definition, problem specification, program formulation, program implementation, and program adoption, as presented in chapter II.

A. Problem Identification

At the problem identification stage, one must have a general picture of the existing condition of the problem under consideration. Since we are interested in the historical evolution of a health care delivery system it will be relevant to study some long term statistical data pertaining to health and related fields. The health status of the country can be described by data on population growth, sex ratios, life expectancy, birth and death rates, maternal and infant mortality rates, nutritional standards, availability of doctor/nurse/trained medical assistance per unit of population, number of hospital beds, among pertinent factors. Other factors which affect health conditions are literacy, availability of safe drinking water, and poverty levels. In the following discussion we shall first
present some comparative data on South Asian and other selected countries. Secondly we shall discuss some longitudinal data on India and finally some data on health-related areas.

1. **Comparative Data**

   Development, as we have defined earlier, is a relational term. Any country sets its standards based on some kind of comparison with countries with similar conditions. Thus it is important to know how India's health-related status compares with some selected countries. This will help clarify questions such as how is it that China with a larger population was able to achieve much more impressive gains in health especially in increasing life expectancy, reducing infant mortality, and population growth? Tables 1 to 3 present some data on South Asian and other selected countries to provide a comparative picture of India's health status.

   **(a) Population Growth:** India's population growth rate is falling very slightly but not at the same rate as that of the other population giant--China--so that according to present indications when a stationary population is reached around AD 2150 India will have 1,707 million people to China's 1,461 million (Table 1). That is an addition of one billion more people in India than in 1982.

   **(b) Life Expectancy:** One of the major indicators of development, without much dispute, is the average life expectancy at birth. In India it was 55 for males and 54 for females in 1982. This is an increase of twelve years for both groups since 1980 (Table 2). Generally life expectancy for women should be higher than that of men. However in India women's life expectancy is lower than that of
men. This is a clear indicator of the lower health status of women in India. Life expectancy in India is comparable to other countries of South Asia except Sri Lanka but far below that of China or Cuba.

(c) Infant and Child Mortality: Infant mortality and child death rates in India are still very high compared to developed countries (Table 2). The infant mortality rate in India has dropped from 165 per 1,000 in 1960 to 94 in 1982, while in China the comparable drop was from 165 to 67. The rest of the countries of South Asia except Sri Lanka also have very high infant mortality rates. These are indicators that should be of great concern to Indian health planners and policy makers.

(d) Availability of Trained Medical Assistance: India had a substantial decrease in the number of population per each physician and nursing person between 1960 and 1980 (Table 2). At the latter date, only Pakistan among its South Asian neighbors had ratios relatively as low. However, in 1980, in China and Cuba as well as in developed western countries, comparable measures of availability of medical personnel, were considerably more favorable. Another problem in India is that a majority of physicians serve the more affluent urban centers, and very few are available to work in rural areas.

(e) Nutritional Status: Data on mean caloric intake indicate India's problem in nutrition (Table 3). Despite becoming a food surplus nation, vast numbers of India's population are malnourished. According to a recent United Nations Food and Agricultural Organization estimates, India has the highest number of undernourished people in the world, 201 million people (Times of India, 1983).
Table 1
Population Growth and Projections: South Asia and Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Average Annual Growth (percent)</th>
<th>Population in Millions</th>
<th>NRR</th>
<th>POP</th>
<th>MOMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>2.5</td>
<td>2.6</td>
<td>2.9</td>
<td>93</td>
<td>119</td>
</tr>
<tr>
<td>Nepal</td>
<td>1.9</td>
<td>2.6</td>
<td>2.6</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>India</td>
<td>2.3</td>
<td>2.3</td>
<td>1.9</td>
<td>717</td>
<td>844</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>2.4</td>
<td>1.7</td>
<td>1.8</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2.8</td>
<td>3.0</td>
<td>2.7</td>
<td>87</td>
<td>107</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>2.2</td>
<td>2.5</td>
<td>2.3</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Bhutan</td>
<td>1.3</td>
<td>2.0</td>
<td>2.2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>China</td>
<td>2.3</td>
<td>1.4</td>
<td>1.0</td>
<td>1,008</td>
<td>1,094</td>
</tr>
<tr>
<td>Cuba</td>
<td>2.1</td>
<td>1.1</td>
<td>1.0</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>U.K.</td>
<td>0.6</td>
<td>0.1</td>
<td>0.1</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>1.3</td>
<td>1.0</td>
<td>0.7</td>
<td>232</td>
<td>245</td>
</tr>
<tr>
<td>U.S.S.R.</td>
<td>1.2</td>
<td>0.9</td>
<td>0.7</td>
<td>270</td>
<td>288</td>
</tr>
</tbody>
</table>

HSS - Hypothetical size of stationary population
NRR - Assumed Year of reaching net reproduction rate of 1
POP MOMT - Population momentum

Table 2
Life Expectancy and Infant and Child Mortality Rates:
South Asia and Selected Countries*

<table>
<thead>
<tr>
<th>Country</th>
<th>Life Expectancy at Birth (years)</th>
<th>Infant Mortality Rate</th>
<th>Child Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>45</td>
<td>48</td>
<td>42</td>
</tr>
<tr>
<td>Nepal</td>
<td>39</td>
<td>46</td>
<td>38</td>
</tr>
<tr>
<td>INDIA</td>
<td>43</td>
<td>55</td>
<td>42</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>62</td>
<td>67</td>
<td>62</td>
</tr>
<tr>
<td>Pakistan</td>
<td>44</td>
<td>51</td>
<td>42</td>
</tr>
<tr>
<td>Afganistan</td>
<td>33</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>Bhutan</td>
<td>33</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td>China</td>
<td>41</td>
<td>65</td>
<td>41</td>
</tr>
<tr>
<td>Cuba</td>
<td>62</td>
<td>73</td>
<td>65</td>
</tr>
<tr>
<td>U.K.</td>
<td>68</td>
<td>71</td>
<td>74</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>67</td>
<td>71</td>
<td>73</td>
</tr>
<tr>
<td>U.S.S.R.</td>
<td>65</td>
<td>65</td>
<td>72</td>
</tr>
</tbody>
</table>

* Rates are per 1,000

Table 3
Availability of Trained Medical Personnel and Nutritional Status:
South Asia and Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Population per</th>
<th>Daily Calorie Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>72,190</td>
<td>47,530</td>
</tr>
<tr>
<td>Nepal</td>
<td>73,470</td>
<td>30,060</td>
</tr>
<tr>
<td>INDIA</td>
<td>4,890</td>
<td>3,690</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>4,490</td>
<td>7,170</td>
</tr>
<tr>
<td>Pakistan</td>
<td>5,400</td>
<td>3,480</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>28,700</td>
<td>16,730</td>
</tr>
<tr>
<td>Bhutan</td>
<td>--</td>
<td>18,160</td>
</tr>
<tr>
<td>China</td>
<td>8,390</td>
<td>1,810</td>
</tr>
<tr>
<td>Cuba</td>
<td>1,060</td>
<td>710</td>
</tr>
<tr>
<td>U.K.</td>
<td>940</td>
<td>650</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>750</td>
<td>520</td>
</tr>
<tr>
<td>U.S.S.R.</td>
<td>560</td>
<td>270</td>
</tr>
</tbody>
</table>

Although protein-calorie malnutrition in India is still a controversial issue (Sukhatme, 1978; Chakrabarti and Panda, 1981; Rao, 1981; Mehta, 1982) the overall percentage of malnourished population in India has been estimated as somewhere between 40 and 25 percent, i.e., between 273 and 171 million as per 1981 Census figures. While levels of nutritional inadequacies for different groups of people—males, pregnant and lactating women etc. are still being debated, the nutritional status of children has been more extensively studied.

Reviewing a number of these studies, Mengoa and Donoso (1974) find that on average these studies show that 2.6 percent of children under 5 years suffer from severe forms of malnutrition (weighing only 60 per cent of ideal body weight) and 16 percent suffer from moderate (60-75 per cent of ideal body weight) forms of malnutrition. This gives the total numbers in the range of 3 to 24 million children severely or moderately malnourished. Other estimates have it as high as 70 million. Most studies agree, however, that while nutrition problems can be of different kinds and that they affect different sections of the population for different reasons, they are all basically rooted in poverty (Chaudhuri, 1984: 119-121).

2. Longitudinal Data on India

These data show that India's achievements as compared to other countries of South Asia and countries such as Cuba and China are not very remarkable. If we check some of the longitudinal data on India we can see that India has made some progress even though it may not be
at as rapid a pace as that of China or Cuba. Tables 4 to 7 present some of these data for a quick overview of the situation within India.

(a) Population Growth: From a negative population growth in 1921 India's population has been growing at an increasing pace until 1981 (Table 4). Despite massive family planning and other population control measures population growth seems to be continuing at a steady pace. Every year India adds a population (about 15 million) that would be equivalent in size to the population of Sri Lanka, or Nepal, or Australia.

(b) Sex Ratio: Sex ratio is one of the clear indicators of development. Being the sturdier of the species, women should outnumber men in a developed country. In India on the contrary sex ratios have been falling continuously until the most recent census in 1981 (Table 4). This is also a clear indication of inadequate nutrition (Sen and Sengupta, 1983), lack of proper access to health care (Wiesner, 1977), and general neglect of women in India (Miller, 1981). There has been a recent surge of interest in these and other issues related to women (Sundar, 1981; Balasubhramanyan, 1982; Banerjee, 1983; Chandra, 1983; Gothaskar, Banaji and Chathurvedi, 1983; Basu, 1984; Sharma, 1985). Some have argued that even modern scientific advancements such as amniocentesis have become detrimental to the survival of the female children in India (Dube, 1983; Jeffrey and Jeffrey, 1983; Kumar, 1983; Vishwanathan, 1983).

(c) Birth and Death Rates: Overall, birth and death rates have shown some steady decline (Table 5). But with a large population base this is not a very enviable situation. A crude birth rate of 33 per
Table 4
Population Growth and Sex Ratio in India, 1901-1981

<table>
<thead>
<tr>
<th>Year</th>
<th>Male (in millions)</th>
<th>Female (in millions)</th>
<th>Total (in millions)</th>
<th>Decade Variation (per cent)</th>
<th>Sex Ratio (females per 1000 males)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>120.70</td>
<td>117.33</td>
<td>238.09</td>
<td>--</td>
<td>972</td>
</tr>
<tr>
<td>1911</td>
<td>128.34</td>
<td>123.67</td>
<td>252.01</td>
<td>5.73</td>
<td>964</td>
</tr>
<tr>
<td>1921</td>
<td>128.50</td>
<td>122.73</td>
<td>251.23</td>
<td>-0.30</td>
<td>955</td>
</tr>
<tr>
<td>1931</td>
<td>142.87</td>
<td>135.73</td>
<td>278.60</td>
<td>11.00</td>
<td>950</td>
</tr>
<tr>
<td>1941</td>
<td>163.62</td>
<td>154.63</td>
<td>318.25</td>
<td>14.23</td>
<td>945</td>
</tr>
<tr>
<td>1951</td>
<td>185.46</td>
<td>175.49</td>
<td>360.95</td>
<td>13.31</td>
<td>946</td>
</tr>
<tr>
<td>1961</td>
<td>226.21</td>
<td>212.86</td>
<td>439.07</td>
<td>21.64</td>
<td>941</td>
</tr>
<tr>
<td>1971</td>
<td>283.94</td>
<td>264.01</td>
<td>547.95</td>
<td>24.80</td>
<td>930</td>
</tr>
<tr>
<td>1981+</td>
<td>353.39</td>
<td>330.58</td>
<td>683.97</td>
<td>24.80</td>
<td>935</td>
</tr>
</tbody>
</table>


### Table 5
Birth and Death Rates in India, 1901-1981

<table>
<thead>
<tr>
<th>Period</th>
<th>Crude birth rate</th>
<th>Crude death rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901-1911</td>
<td>49.2</td>
<td>42.6</td>
</tr>
<tr>
<td>1911-1921</td>
<td>48.1</td>
<td>47.2</td>
</tr>
<tr>
<td>1921-1931</td>
<td>46.4</td>
<td>26.3</td>
</tr>
<tr>
<td>1931-1941</td>
<td>45.2</td>
<td>31.2</td>
</tr>
<tr>
<td>1941-1951</td>
<td>39.9</td>
<td>27.4</td>
</tr>
<tr>
<td>1951-1961</td>
<td>41.7</td>
<td>22.8</td>
</tr>
<tr>
<td>1961-1971</td>
<td>41.1</td>
<td>18.9</td>
</tr>
<tr>
<td>1971-1981*</td>
<td>33.0</td>
<td>15.0</td>
</tr>
</tbody>
</table>

*estimated

### Table 6

**Average Life Expectancy at Birth in India, 1901-1981**

<table>
<thead>
<tr>
<th>Period</th>
<th>Male (years)</th>
<th>Female (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901 --1911</td>
<td>22.6</td>
<td>23.3</td>
</tr>
<tr>
<td>1910 --1921</td>
<td>19.4</td>
<td>20.9</td>
</tr>
<tr>
<td>1921 --1931</td>
<td>26.9</td>
<td>26.6</td>
</tr>
<tr>
<td>1931 --1941</td>
<td>32.1</td>
<td>31.4</td>
</tr>
<tr>
<td>1941 --1951</td>
<td>32.4</td>
<td>31.7</td>
</tr>
<tr>
<td>1951 --1961</td>
<td>41.9</td>
<td>40.6</td>
</tr>
<tr>
<td>1961 --1971</td>
<td>46.4</td>
<td>44.7</td>
</tr>
<tr>
<td>1971 --1981</td>
<td>52.6*</td>
<td>51.6*</td>
</tr>
</tbody>
</table>

*estimated*  

Table 7

Infant Mortality Rates in India, 1911-1982

<table>
<thead>
<tr>
<th>Period</th>
<th>Infant mortality rate per 1000 live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>1911 - 1915</td>
<td>204</td>
</tr>
<tr>
<td>1916 - 1920</td>
<td>219</td>
</tr>
<tr>
<td>1921 - 1925</td>
<td>174</td>
</tr>
<tr>
<td>1926 - 1930</td>
<td>178</td>
</tr>
<tr>
<td>1931 - 1935</td>
<td>174</td>
</tr>
<tr>
<td>1936 - 1940</td>
<td>161</td>
</tr>
<tr>
<td>1941 - 1945</td>
<td>134</td>
</tr>
<tr>
<td>1946 - 1950</td>
<td>146</td>
</tr>
<tr>
<td>1951 - 1961</td>
<td>146*</td>
</tr>
<tr>
<td>1976</td>
<td>129+</td>
</tr>
<tr>
<td>1978@</td>
<td>127</td>
</tr>
<tr>
<td>1982**</td>
<td>94</td>
</tr>
</tbody>
</table>

*Actuarial Report +Rural India

Source: Based on Sample Registration Scheme; Pocket Book of Health Statistics of India, 1976. New Delhi: Central Bureau of Health Intelligence, Directorate General of Health Services, Ministry of Health and Family Planning, Government of India.


1,000 is too high to achieve a stable population in the near future.
Due to extension of health services death rates have fallen from 47.2
per 1,000 in 1911-1921 to 15 per 1,000 in 1971-1981.

(d) Life Expectancy: Life expectancy at birth rose from 22.6 for
males and 23.3 for females in 1901-1901 to 52.6 for males and 51.6 for
females between 1971-1981 (Table 6). This is a gain of thirty years.
However, as we have already mentioned, it is far below the life
expectancy in countries such as China or Cuba which had similar
problems of development. Also the Indian women's life expectancy has
not always been behind that of Indian men as it is now.

(e) Infant Mortality: From a very high 204 per thousand live
births in 1911 infant mortality rates have come down to 94 per thousand
in 1978 (Table 7). This in itself may look quite an achievement
unless we consider the fact that it is still a very high rate
considering the extent of medical knowledge available on childbirth
and children's diseases, and vaccines that can prevent most diseases
which were fatal to children only a few decades ago.

3. Health Related Areas

There are a number of other aspects of development which are
linked to health status of a country. Some of these are literacy
rates, environmental sanitation and water supply. Improvement in
these are fundamental to improvement in health status.

(a) Literacy rates: Literacy rates are an aspect of development
which is closely tied to health status of a country. There is more
and more agreement that literacy, especially female literacy, is
crucial in the success of population control and reduction of maternal
and infant mortality (Zachariah and Kurup, 1984; Karkaria, 1985). When we examine data presented in Table 8 closely we will notice that literacy rates vary widely between males and females and again between different states in India. Kerala, which has been upheld as a successful case of population control has the highest female literacy (Ratcliffe, 1977; Malgavkar and Pai Panandikar, 1982; Zachariah and Kurup, 1984; Karkaraia, 1985). According to the latest World Bank Report the earlier sequence of urbanization, industrialization, shift from cottage to factory production and significant rise in the income level has been replaced by education, health and simple alleviation of poverty as preconditions for a drop in fertility rates (Karkaria, 1985: 6).

The states of Rajasthan, Madhya Pradesh, Bihar, Uttar Pradesh, and Andhra Pradesh have the lowest literacy, especially female literacy, in India. These five states between them have over forty six percent of the Indian population (320 million in 1981 with 153 million females) and their combined female literacy rate is only fifteen percent (23 million). This is something to be seriously concerned about given the implications of the new findings reported above.

(b) Water Supply: In 1947, only 16 percent of all towns and cities had adequate water supply which covered about half the urban population. The quantity of water supplied was inadequate and the quality of service was poor. By 1978, about 83 percent of the urban population had some provision of protected water supply. Still the quantity and quality remain unsatisfactory. The case of rural areas is
still very deplorable with only about 64,000 (10.5 percent) of the villages having adequate water supply of acceptable quality. About 210,000 (34.3 percent) villages have water supply with pollution risk, 185,000 (30.2 percent) have adequate but unprotected sources, and 153,000 (25 percent) are "problem villages" with inadequate water supplies infested with endemic cholera, guinea-worm and other health hazards. Even where there are adequate water supplies, the scheduled castes (formerly known as "untouchables") have problems of access to the common village well (ICSSR/ICMR, 1981: 54).

(c) Environmental Sanitation: Very few of the Indian cities have adequate sewerage disposal systems and the unchecked squatter developments make the cities crowded and unhealthy. Sewage and solid waste disposal systems are inadequate with the threat of cholera, hepatitis, diarrhoea and other communicable diseases ever present in major cities. The situation in rural areas is no better with no proper waste disposal systems available in most villages.

Most diarrhoeal diseases, which are a major killer of children in rural areas, could be prevented with clean water and a clean environment. With the emphasis on industrial development, there is also the problem of toxic waste disposal in urban areas. The recent catastrophe at the Union Carbide Plant in Bhopal underscores the health hazards that are unknown due to ineffective measures to handle industrial accidents and wastes.
Table 8
Literacy Rates in India by States, 1971 and 1981

<table>
<thead>
<tr>
<th>State</th>
<th>Population in millions</th>
<th>Literacy Rate</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIA</td>
<td>588.1</td>
<td>683.9</td>
<td>29.5</td>
<td>36.1</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>34.5</td>
<td>53.4</td>
<td>24.6</td>
<td>29.9</td>
</tr>
<tr>
<td>Assam</td>
<td>14.6</td>
<td>19.9</td>
<td>28.2</td>
<td>----</td>
</tr>
<tr>
<td>Bihar</td>
<td>56.4</td>
<td>69.8</td>
<td>19.9</td>
<td>26.0</td>
</tr>
<tr>
<td>Gujarat</td>
<td>26.7</td>
<td>34.0</td>
<td>35.8</td>
<td>43.8</td>
</tr>
<tr>
<td>Haryana</td>
<td>10.0</td>
<td>12.9</td>
<td>26.9</td>
<td>35.8</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>3.5</td>
<td>4.2</td>
<td>32.0</td>
<td>41.9</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>4.6</td>
<td>5.9</td>
<td>18.6</td>
<td>26.2</td>
</tr>
<tr>
<td>Karnataka</td>
<td>29.3</td>
<td>37.0</td>
<td>31.5</td>
<td>38.4</td>
</tr>
<tr>
<td>Kerala</td>
<td>21.3</td>
<td>25.4</td>
<td>60.4</td>
<td>69.2</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>41.7</td>
<td>52.1</td>
<td>22.1</td>
<td>27.8</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>50.4</td>
<td>62.7</td>
<td>39.2</td>
<td>47.4</td>
</tr>
<tr>
<td>Manipur</td>
<td>1.1</td>
<td>1.4</td>
<td>32.9</td>
<td>42.0</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>1.0</td>
<td>1.3</td>
<td>29.5</td>
<td>33.2</td>
</tr>
<tr>
<td>Nagaland</td>
<td>0.5</td>
<td>0.8</td>
<td>27.4</td>
<td>42.0</td>
</tr>
<tr>
<td>Orissa</td>
<td>21.9</td>
<td>26.2</td>
<td>26.2</td>
<td>34.1</td>
</tr>
<tr>
<td>Punjab</td>
<td>13.6</td>
<td>16.7</td>
<td>33.7</td>
<td>40.7</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>25.8</td>
<td>34.1</td>
<td>19.1</td>
<td>24.0</td>
</tr>
<tr>
<td>Sikkim</td>
<td>0.2</td>
<td>0.3</td>
<td>17.7</td>
<td>33.8</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>41.2</td>
<td>48.3</td>
<td>39.5</td>
<td>45.8</td>
</tr>
<tr>
<td>Tripura</td>
<td>1.6</td>
<td>2.1</td>
<td>31.0</td>
<td>41.6</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>88.3</td>
<td>110.9</td>
<td>21.7</td>
<td>27.4</td>
</tr>
<tr>
<td>West Bengal</td>
<td>44.3</td>
<td>54.5</td>
<td>33.2</td>
<td>40.9</td>
</tr>
</tbody>
</table>

B. Problem Definition

Once the general problems are identified, it must be defined in more accurate terms in order to take action to correct them. Research into problems of population growth, infant mortality, maternal health, communicable diseases, literacy, poverty levels and so on are ongoing. But these studies do not necessarily lead to policy action unless the government which has the primary responsibility for solving these problems take these upon itself as serious problems to be tackled. Often the policy makers who are elected politicians are not well versed with all the aspects of the problem. Therefore they usually appoint committees of experts to define the problem taking all the available research knowledge into account.¹

¹ Bhore Committee (1943)

In 1943 the Imperial Government of India appointed a committee, named the Health Survey and Development Committee under the chairmanship of Sir Joseph Bhore, to survey the existing medical and public health facilities and organizations in the country and to make appropriate recommendations for further development. This committee submitted its report in 1946. It recommended the setting up of (i) a unified health authority at the Centre and in the provinces; (ii) a unified health authority at the district level; (iii) the integration of curative and preventive health services; and (iv) the Primary Health Centre as the focal point for providing comprehensive curative and preventive services in rural areas.
This report has been the guideline for most of the health programmes launched by the independent Government of India for the following fifteen years. In keeping with the Bhore Committee's recommendations, primary health centres were set up as part of Community Development Blocks, each with 80-100,000 population. The government also launched a number of need-based programs such as the BCG (1951), National Malaria Eradication Programme (1953) and the Dais Training Programme as part of the Maternal and Child Health Programme (1956).

2. Chopra Committee on Indigenous Systems of Medicine (1948)

Even though Western or allopathic medical practitioners predominate in the Indian health care system, India has well-developed indigenous health care systems such as Ayurveda, Unani, and Siddha, which were in vogue for many centuries until the arrival of the British. Ayurveda, the better developed of these systems, is still practiced by hundreds of indigenous medical practitioners.

The failure of the Health and Development Committee under the chairmanship of Sir Joseph Bhore to take stock of the indigenous health systems led to the appointment of another committee under the chairmanship of Col. Sir R. N. Chopra, to consider and recommend necessary steps to improve facilities for research and training in indigenous systems, in order to increase their usefulness to the public. The most important recommendation of the committee was that both western and indigenous systems of medicine should be harmonized and synthesized for the purpose of both teaching and medical relief. Curricula, which was recommended to be uniform for the whole country,
for this newly devised system should be prepared in such a way that whatever is weak in one system should be supplemented by strong points of the other (Chopra, 1948).

About 7,000 students are admitted to the 102 indigenous medical schools (92 Ayurveda, 10 Unani, 1 Siddha) as against 13,000 students in 107 allopathic medical colleges in India (Udupa, 1975). Both allopathic and ayurvedic doctors are appointed to primary health centres. However the allopathic system of medicine is more dominant in India now. Table 9 presents the number of medical practitioners by the type of system they are trained in.

3. Mudaliar Committee (1959)

In 1959, a second Health Survey and Development Committee under the chairmanship of Sir Lakshmanaswami Mudaliar was appointed to review all available health facilities in the country and to recommend future health planning. The Mudaliar Committee concluded that while integration had taken place in all states at the periphery, medical and public health departments continued to function separately at the district level except in West Bengal and Rajasthan. The integration of curative and preventive services had taken place at the Centre and the States except in Andhra Pradesh, Maharashtra and Tamil Nadu.

Between 1962 and 1970 a number of National Programmes were launched, such as Family Planning (1962), Small Pox Eradication (1962), Leprosy Control (1962), and Cholera Control (1970). For each new program workers were trained to deal with that problem only. Thus cadres of malaria workers, vaccinators, sanitary inspectors, etc. were trained in the 1960s and 1970s.
Table 9
Health Care Personnel in India, 1983

<table>
<thead>
<tr>
<th>Type of trained personnel*</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allopaths</td>
<td>268,712</td>
</tr>
<tr>
<td>Ayurvedic physicians</td>
<td>233,624</td>
</tr>
<tr>
<td>Homeopaths</td>
<td>112,638</td>
</tr>
<tr>
<td>Unani practitioners</td>
<td>28,737</td>
</tr>
<tr>
<td>Siddha practitioners</td>
<td>18,537</td>
</tr>
<tr>
<td>Dentists</td>
<td>8,648</td>
</tr>
<tr>
<td>Nurses</td>
<td>150,399</td>
</tr>
<tr>
<td>Midwives</td>
<td>144,820</td>
</tr>
</tbody>
</table>

*Besides an average of 12,000 medical graduates are trained every year in India. 14,156 medical graduates in 1977-78 was the largest number so far.

4. Kartar Singh Committee (1971)

In 1971, the first meeting of the Executive Committee of the Central Family Planning Council recommended that steps should be taken for the integration of medical, public health, and family planning services at the peripheral level. A committee was to be set up to examine and make detailed recommendations on the feasibility of having multipurpose workers in the field. Thus the Committee on Multipurpose Workers under Health and Family Planning Programme (Kartar Singh Committee) was constituted which submitted its report in 1973. The combined National Council for Health and Family Planning accepted in principle the concept of multipurpose workers in 1974. Twenty eight districts (out of 400) in six states in India initiated multipurpose workers' scheme, whereby a single-purpose worker--leprosy worker for example--was retrained to handle other diseases as well as undertake promotional and preventive work in villages.

5. Health for All by 2000 AD

The Janata Party which came to power in the wake of a voter backlash due to forced sterilizations during the "emergency" under Mrs. Indira Gandhi's Congress Party, was reluctant to continue the vigorous family planning program. Emphasis was changed to voluntary sterilization. The most important step taken during the Janata regime was the introduction of the community health volunteer scheme announced in April 1977. India was also a signatory of the Alma Ata Declaration sponsored by the World Health Organization (1978).

When the Congress Party under Mrs. Indira Gandhi came back to power in 1980, the community health volunteer scheme was not
cancelled. Instead it was accepted as a useful scheme. In response to the Alma-Ata declaration, mentioned above, the Ministry of Health and Family Welfare came out with a report of a working group on "Health for All by 2000 AD" (March 25, 1981). The working group set the following targets to be achieved by 2000 AD: a death rate of 9 per 1000; infant mortality rate below 60 per 1000; maternal mortality rate of 2 per 1000 live births; life expectancy at birth for both sexes of 64 years; only ten percent of deliveries with birth weight below 2500 gms (5.5 lbs); natural growth rate of population of 1.2 percent per year; family size of 2.3; mean age at first marriage for girls at 18 years; all mothers to receive prenatal care as well as trained attendance at delivery; immunizations for major diseases expected to cover all population (Karkal, 1982: 249).

It is quite clear that to achieve these targets the present rural health facilities and personnel have to be substantially increased. Health professionals, social scientists and rural development activists were quick to point out that while the targets in themselves were laudatory, the approach was not feasible. A study group was jointly set up by the Indian Council of Social Science Research (ICSSR) and the Indian Council of Medical Research (ICMR) to discuss alternatives to the proposal.

6. The Alternative Strategy to Achieve Health for All

"The Alternative Strategy to Achieve Health for All," proposed by ICSSR/ICMR joint committee (1981), points out that many common illnesses are self-curing and/or self limiting and need only symptomatic treatment with simple remedies, whether herbal, indigenous
medicine or allopathic. A majority of illnesses are communicable diseases and can be controlled by preventive measures, can be readily diagnosed and treated with cheap and highly effective drugs. The group has therefore, proposed that primary health services be based in the community through training and involvement of community health volunteer (CHV), a male and a female for each 1000 population. Supplementary services of guidance, training and support for preventive and curative activities would be provided by the subcentre which would have two multipurpose workers and two medical attendants. Each subcentre would have five beds to deal with more common medical and surgical problems including intravenous rehydration, deliveries, minor injuries and provide facilities for family planning. The group has recommended elimination of the category of primary health centres after CHVs and subcentres are operating. It believes that present primary health centres have a conglomeration of semi-professional and para-medical personnel, who deliver poor medical care and give no preventive and promotive health care (Karkal, 1982: 253).

C. Problem Specification

Once problems are identified and defined they must be specified into quantifiable and measurable variables in order to take action to solve the problem. Often the policy makers who define problems as worthy of attention and are willing to commit available resources, are not technically qualified. So the problem is usually given to technical experts to translate into goals and targets. The policymakers may decide that "Health for All" should be achieved by
A. D. 2000. The full implications of this may not be within their understanding. Technical experts can specify all the details of how many medical doctors, nurses, health workers, hospitals, drugs and how much money will be required to achieve it.

1. Population growth

Controlling population growth has been recognized as a major task in the development of India. A growth rate of 2.4 percent per year is too high for a poor country such as India. Population experts have calculated at what rate of growth India can achieve a stable population. As we have already mentioned, according to present indications, India's population will grow at such a rate that in the twenty first century there will be more people in India than in China. It is known that unless Indians adopt a one child per family norm like China has, the problem of numbers will be a serious one for India. Some of the obstacles in achieving this are early marriage among women and men, preference for male offspring among most Indians, advantages of having a large family in a non-mechanized agrarian economy. Birth control methods are accepted by only a small percentage of Indians who belong mainly to the middle class. Rural Indians opt for sterilization usually after having four or five children including at least two sons. Many of the birth control methods are not safe and there is much resistance to compulsion in family planning. There have also been problems of mismanagement in the distribution of contraceptives (Karkaria, 1985). Thus the technical experts have plenty of problems to tackle in the field of population control.
2. Maternal and Child Health

Infant mortality rates in India are rather high compared to developing countries such as China, Cuba or Sri Lanka. Many infant deaths are related to unsanitary practices at delivery by the traditional birth attendant. Some of the complications such as low birth weight are due to malnutrition and inadequate care of pregnant women. Children between three months to five years old are victims of preventable diseases such as diphtheria, whooping cough, tetanus and are often disabled due to sicknesses such as polio. All these are preventable with immunizations. Pregnant women are often deficient in vitamin A. Due to non-positive knowledge often many nutritious food items are denied to pregnant women in India. These problems can be solved through training of dais in sanitary child birth practices, nutrition education of pregnant women, immunization of new-borns and children.

3. Disease Control

Many of the diarrhoeal diseases are due to lack of pure drinking water or due to unsanitary environment. Most of the Indian villages and most cities lack adequate drainage facilities. Over one third of the nearly 600,000 Indian villages lack pure drinking water. Many children die of diarrhoea due to non-positive knowledge about the nature of the illness. Most of the victims die due to lack of fluids in the body. Simple techniques such as supplying enough fluids to a sick child can save most of these children. Oral rehydration therapy (ORT), recommended by the World Health Organization is a simple and cheap cure if correctly administered. Providing safe drinking water
for all Indians is a goal yet to be achieved. Digging simple soak pits near the houses to drain waste water is a simple and inexpensive technology that can reduce diarrhoeal diseases.

Communicable diseases such as malaria, tuberculosis, and leprosy which afflict vast numbers of Indians are controllable and curable with continuous treatment and care. Fifty six percent of all deaths and diseases which affect 48 percent of Indians are caused by malnutrition, unclean environment and non-immunization (Ankleswaria, 1984). Adequate drugs for these diseases are yet not available freely.

4. Investment Pattern in Health:

Investment in health in India has been declining in successive five year plans and the annual plans as can be seen from Table 10. This should account for the lack of adequate medicines, personnel and physical facilities in a large number of primary health centres all over the country. Lack of adequate funds make the plan targets unachievable. It is well-known that medicines are in short supply at government health facilities. Governmental expenditure on health has been declining for the past thirty years from 3.3 percent of total budget in the first Five Year Plan (1951-56) to 1.87 percent in the Sixth Five Year Plan (1980-85). The Seventh Plan (1985-1989), which is under discussion, is proposing to raise the expenditure on health to 3.0 percent. There seems to be renewed emphasis on achieving the targets of 60 percent couple protection by 2000 AD as well as constructing a primary health center for every 30,000 population (Hindustan Times Correspondent, 1985). Much of the proposed expenditure is targetted for family planning activities.
Table 10
Pattern of Government Investment in Health in India, 1951-1985

<table>
<thead>
<tr>
<th>Plan Period</th>
<th>Total Plan*</th>
<th>Plan Investment* on Health</th>
<th>Health Investment as % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Plan (1951-56)</td>
<td>19,600</td>
<td>652.0</td>
<td>3.30</td>
</tr>
<tr>
<td>Second Plan (1956-61)</td>
<td>46,720</td>
<td>1,408.0</td>
<td>3.00</td>
</tr>
<tr>
<td>Third Plan (1961-66)</td>
<td>85,765</td>
<td>2,259.0</td>
<td>2.60</td>
</tr>
<tr>
<td>Annual Plans (1966-69)</td>
<td>66,254</td>
<td>1,402.0</td>
<td>2.10</td>
</tr>
<tr>
<td>Fourth Plan (1969-74)</td>
<td>157,788</td>
<td>3,355.0</td>
<td>2.10</td>
</tr>
<tr>
<td>Fifth Plan (1974-79)+</td>
<td>393,220</td>
<td>5,327.0</td>
<td>1.40</td>
</tr>
<tr>
<td>Annual Plan (1978-79)@</td>
<td>116,500</td>
<td>2,815.3</td>
<td>2.42</td>
</tr>
<tr>
<td>Annual Plan (1979-80)@</td>
<td>126,010</td>
<td>2,745.5</td>
<td>2.19</td>
</tr>
<tr>
<td>Sixth Plan (1980-85)+</td>
<td>975,000</td>
<td>18,211.0</td>
<td>1.87</td>
</tr>
<tr>
<td>Annual Plan (1980-81)</td>
<td>145,930</td>
<td>3,168.0</td>
<td>2.16</td>
</tr>
<tr>
<td>Annual Plan (1981-82)</td>
<td>174,790</td>
<td>3,566.0</td>
<td>2.00</td>
</tr>
<tr>
<td>Annual Plan (1982-83)</td>
<td>210,810</td>
<td>3,924.4</td>
<td>1.86</td>
</tr>
<tr>
<td>Annual Plan (1983-84)</td>
<td>255,480</td>
<td>4,714.6</td>
<td>1.84</td>
</tr>
</tbody>
</table>

* In Indian Rupees
+ Outlay
@ Janata Government (1977-1980) overhauled the Plan outlays of the previous government and started what was called a 'rolling plan.'

5: Health Care Facilities and Personnel

Even though India trains over 12,000 medical doctors per year, 4,454 (17 percent) of the total of 26,723 sanctioned positions of doctors in rural areas were vacant in December 1983, (Rajagopalan, 1984) while 18,499 medical graduates were on the live register of unemployment exchanges as of December 1982 (Hindustan Times, 1984a). There is general resistance among medical graduates to work in rural areas on account of poor salaries, inadequate facilities for children's education and the opportunity to make money by practising medicine in urban areas or by migrating to other countries.

Due to lack of funds and administrative inefficiency, often government hospitals themselves are dangerous to health (Chowdhury, 1983). Moreover, because of the correlation of poverty with morbidity, (Djurfelt and Lindberg, 1975), health planners cannot simply expect major reduction in morbidity by setting up more hospitals or training more doctors and para-medical personnel. Many of the health problems are related to malnutrition, unsanitary environment, non-positive knowledge regarding health, nutrition, child care etc. For these the answers do not lie in providing more drugs or doctors but in improving the economic, environmental and educational standard of the people. However, along with these, aspects of life directly related to health also must be improved.

D. Program Formulation

After the problem identification, definition and specification phases of health care as a knowledge utilization system, we come to
the program formulation stage. In this section we shall discuss the various programmes that have been formulated as and when problems were defined and translated for possible solution.

1. Primary Health Centre

One of the major suggestions of the Bhore Committee was to adopt a primary care approach to solving health problems of the vast rural population. That was the beginning of primary health centres where the minimum facilities to take care of the most common health problems would be available. The first primary health centres were set up in 1952 and they are still the mainstay of rural health care delivery system of the government. Most recently the goal of providing "Health for All by 2000 AD" is hoped to be achieved by providing one primary health centre for every 30,000 people (Ministry of Health and Family Welfare, 1981). More and more functions have been added to the primary health centre from its inception.

In 1962 the National Family Planning Programme was launched with a doctor specially allocated for that purpose at the primary health centre making it simultaneously the family welfare centre as well. The Community Health Volunteer Scheme with emphasis on maternal and child health which was initiated in 1977 was put in charge of another doctor thus increasing to three the number of doctors at a primary health centre. In the sixties a number of disease eradication programmes were launched with workers being trained to handle the tasks of detection, distribution of medicines, follow-up etc. Thus there were malaria workers, leprosy workers, and sanitary inspectors each with their own tasks. In the seventies, it was felt that some of
these workers were overworked while others were underutilized. So it was decided to train the single-purpose workers into multi-purpose workers capable of handling all aspects of primary health care. Besides the three doctors, there are a number of para-medical staff such as nurses, auxiliary-nurse-midwives, multi-purpose workers, and sanitary inspectors attached to the primary health centre.

2. National Family Planning Programme

India is the first developing country to have launched an official population control programme. The dangers of uncontrolled population growth were known to the planners of Independent India. A modest beginning was made during the Second Five Year Plan (1956-60) with an average of about 14,000 vasectomies and 16,000 tubectomies per year (Table 11). This was far too low a rate to make any impact. Therefore the National Family Planning Programme was launched in 1962 giving added momentum. In the Third Five Year Plan (1961-65) an average of over 213,700 vasectomies and 60,900 tubectomies were performed. These figures went up to 1.27 million vasectomies and 115,000 tubectomies in the Inter-Plan period between 1966-68. Various approaches were used to encourage and promote birth control measures. In keeping with the traditional melas (festivals) to honor deities, family planning melas were organized in some parts of the country and were found to be popular. Incentives are given to those who undergo sterilization as compensation for lost wages.

A new thrust to birth control programmes was given during the period between 1975-77 which now known as the "emergency period" when Mrs. Indira Gandhi, the Prime Minister, adopted strong measures to
implement government schemes. Targets were fixed for every type of government employee including school teachers, revenue officials, and medical staff. During this period, there was significant increase in the number of sterilizations including 2.1 million vasectomies and 1.2 million tubectomies per year.

There was considerable resentment, though not reported in the press due to censorship, about the undue force exerted in many cases to achieve targets of sterilizations especially in the northern states known as the "Hindi belt." The stunning electoral defeat of Mrs. Gandhi and her Congress(I) Party in the March 1977 elections is largely attributed to these excesses. The Janata Party which came to power in 1977, advocated a completely voluntary approach in the adoption of birth control measures. There was a drop of 81 percent in the number of vasectomies and nine percent in the number of tubectomies the very next year. It can be clearly seen from Table 9 that since 1977 sterilization is becoming more and more a method preferred by females than males (Caldwell, Reddy and Caldwell, 1984; Srikantan, Balasubramanian, and Nikam, 1984).

3. Voluntary Organizations in Health Care

In India health care is provided primarily by three sectors. First of all there is the government sector with well equipped hospitals in cities and district headquarters along with some 5,000 primary health centres and over 50,000 sub-centres in rural areas.
<table>
<thead>
<tr>
<th>Average per year between years</th>
<th>Vasectomy % Change over previous year</th>
<th>Tubectomy % Change over previous year as % of total sterilizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Plan 1956-1960</td>
<td>14,193</td>
<td>16,342</td>
</tr>
<tr>
<td>Third Plan 1961-1965</td>
<td>213,727</td>
<td>60,905</td>
</tr>
<tr>
<td>Inter-Plan 1966-1968</td>
<td>1,272,194</td>
<td>115,082</td>
</tr>
<tr>
<td>Fourth Plan 1969-1973</td>
<td>1,314,221</td>
<td>486,504</td>
</tr>
<tr>
<td>Fifth Plan 1974-1977+</td>
<td>2,109,266</td>
<td>1,198,873</td>
</tr>
<tr>
<td>Sixth Plan 1978**</td>
<td>390,922</td>
<td>1,092,985</td>
</tr>
<tr>
<td>1979**</td>
<td>472,687</td>
<td>1,305,237</td>
</tr>
<tr>
<td>1980++</td>
<td>438,909</td>
<td>1,613,861</td>
</tr>
<tr>
<td>1981</td>
<td>573,469</td>
<td>2,218,905</td>
</tr>
<tr>
<td>1982@</td>
<td>584,440</td>
<td>3,395,784</td>
</tr>
</tbody>
</table>

* Totals for the plan periods in parentheses.  + Emergency period.  ** Janata Government.  ++ Congress Government back in power.  @ Provisional figures.

Secondly there is the private sector which operates hospitals and nursing homes as commercial enterprises aimed at profit, mostly in large and small cities. Thirdly there is the voluntary sector run by non-profit trusts and associations mostly under the auspices of Christian Churches as well as other major religions, viz., Hindu, Muslim, Sikh, Budhist, Jain, and Parsee. According to one estimate (Voluntary Health Association of India, n.d.: 215) there are 1,355 hospitals with (six or more beds), 692 dispensaries (with less than six beds) and 1,678 other institutions (number of beds unknown) with 118,672 beds, 7,796 doctors and 16,296 nurses treating 3.25 million inpatients and 31.89 million outpatients.

Some of the more innovative programs in rural health care have been undertaken by voluntary organizations (Arole and Arole, 1975, 1978; Gwatkin, Wilcox and Wray, 1980; Coyaji, 1981; Shah and Shah, 1981; Faruqee and Johnson, 1982; Chakravorthy, 1983; Alliband, 1984; Hardiman, 1984). They have a number of advantages over the government system in problem identification, definition, and specification and in program formulation, implementation. First of all they can choose the region and the community where they want to work. Their failure will not become an immediate political issue as in the case of government programs. Thus they can undertake innovative programs without the fear of failure which seems to guide every government program. Every policy decision need not trickle down through the bureaucratic pipeline as in the government system. Often funding for these agencies comes from national and international agencies which do not constantly hover over the shoulder with targets and quotas to be
achieved. Voluntary organizations are usually headed by service-minded persons who have more commitment to problem solution than government officials.

The Government of India was suspicious of the activities of many voluntary organizations which were funded by foreign agencies mainly on account of tax evasion and foreign currency exchange violations. More recently the success of some of these agencies seems to have softened the government's attitude. In 1983, under an agreement, the United States will provide $20 million in U. S.-owned Indian rupees to help voluntary organizations to implement projects to expand and improve basic and preventive health, family planning and nutrition services (India Abroad, 1983: 16).

The community health volunteer scheme which was introduced as a National Scheme in 1977 was inspired by the success of the village health workers trained by the Comprehensive Rural Health Project, Jamkhed and other voluntary organizations. Leaders of successful voluntary organizations such as Drs. Raj and Mabelle Arole, Banoo Coyaji, and A. K. Antia have become consultants to the government on rural health and population matters. Alliband (1984) believes that voluntary organizations are the catalysts of development in India.

E: Program Implementation

Program implementation requires adequate planning and training of change agents. It also requires financial outlays to meet the targets. The success of any knowledge utilization depends to a large extent in the kind of change agents that are recruited and trained for
implementing particular programs. Very often the government formulates programs and the existing personnel are expected to implement them. Since government employees cannot be hired and fired as new schemes are formulated, they are usually retrained to handle the new schemes. Occasionally there have been totally new schemes with new change agents recruited to implement them. We shall discuss a few of these change agents and how effective they have been in program implementation.

1. Dais Training Programme

The dai (midwife, traditional birth attendant) has been an effective change agent at the village level in health care. The dai has been a well known figure in Indian life. She played an important role in the life of women particularly in the rural areas. Even today, with the extension of medical facilities to rural areas, few deliveries take place in hospitals or are attended by trained nurse or nurse-midwife and the indigenous village dai continues to provide obstetric care.

The dai not only assists at the time of birth, but is also a counselor to the village women during pregnancy and after delivery, in times of illness, and when they have personal or domestic problems. She is thus a welcome visitor in the house and wields considerable influence over rural women. The indigenous dais have been carrying on their profession using traditional and orthodox methods which have been handed down from mother to daughter. Most of them are illiterate. Lack of proper skills and absence of aseptic techniques
in their work lead to high morbidity and mortality among mothers and newborns.

It was therefore, felt that this vast potential of indigenous dais could be better utilized for extending maternal and child health services to the rural areas by providing them with the necessary training. Such training would not only improve conditions for safe childbirth but would also ensure the extension of better maternal and child care services. Besides, the services of the dai could be utilized for spreading the message of the small family norm. This was the rationale behind the Training of Dais Scheme which was introduced during the Second Five Year Plan (1956-61) period as a centrally sponsored scheme under the Maternal and Child Health Programme. The scheme was continued in each successive Five Year Plans up to 1977 in a modest way.

2. The Community Health Worker Scheme

The Community Health Worker Scheme is the most important scheme, as far as rural health and people's participation are concerned, as announced by Raj Narain--the controversial health minister in the newly elected Janata government--on April 20, 1977. Soon after he took charge, Narain announced the Community Health Worker Scheme, whereby one male or female worker per village or 1000 people would be trained to administer medicines for minor ailments as well as carry out promotional and preventive health care within the village. Some hailed this as a radical scheme while others questioned the feasibility of training such a large number of people in so short a time.
The Medical Association of India, the voice of physicians in India, in its national conference held in Bombay in 1977, openly registered its opposition to the scheme. Soon there followed a spate of editorials and articles in newspapers and magazines suggesting that the government was "abandoning the health of the rural poor to quacks." Deliberation at the conference of physicians also suggested that medical doctors were the only persons competent to take care of the health of the people and if doctors were unwilling to serve in rural areas under existing conditions, larger financial incentives should be provided (Karkal, 1982: 252).

3. Health Guides


...[d]uring 1981, as a result of evaluation and concurrent reviews, the Community Health Volunteer Scheme has been completely restructured and revised and now known as the 'Health Guides Scheme.' In the revised scheme greater emphasis has been laid on the involvement of the community. Provision has been made for the establishment of a Village Health Committee for each village. It is envisaged that this Committee would take an active part in implementation of Health and Family Welfare and MCH programmes. Emphasis has been laid on selecting women as Health Guides [emphasis added].

As far as we know there are only experimental attempts to recruit only women as health guides. In Maharashtra state, the Ahmednagar district has been chosen to implement this experiment with the task of training assigned to the Comprehensive Rural Health Project, Jamkhed. We shall discuss these experiments in detail in Chapters V and VI as these form part of our case studies.
F. Program Adoption

We can evaluate the success of the knowledge utilization process by checking the results of program adoption upon implementation. Successful program adoption depends on the proper identification, definition and specification of the problem followed by appropriate program formulation, and implementation by suitable change agencies and change agents. We shall briefly discuss program adoption in the areas of family planning, and primary health care through the dais and health guides.

1. Family Planning Adoption

We have noted in Table 10 that sterilizations have become the principal method of birth control in India. Coercion was used to force more men and women to undergo sterilization during the emergency period between 1975-77 with disastrous political consequences. During this period there has been a significant rise in the number of sterilizations. After the Congress Party under Mrs. Indira Gandhi lost power in 1977, family planning programs, especially sterilizations, have become more and more a "women's program." While women have continued to adopt sterilization as a method of birth control fewer and fewer men seem to do so. Between 1974-77, seventy three percent of all those sterilized were men, but the ratio reversed in 1978, when only fifteen percent of those sterilized were men.

How far this is due to the introduction of community health volunteers and health guides who are women is difficult to judge at this time. It may be one of the factors. Caldwell, Reddy and
Caldwell (1984) report various reasons for this behavior in South India. They have found the increasing tendency among women to take responsibility to get sterilized both as a birth control method and as a matter of sacrifice in the event of post operative complications. Most rural families prefer that the earning member be in good health.

The new Prime Minister, Mr. Rajiv Gandhi, has not come forth strongly supporting birth control as a matter of vital national priority. Observers feel that he is perhaps cautious on this matter, not wanting to be associated with the coercive tactics employed during the emergency (Karkaria, 1985).

Table 12 presents a state by state data on couples currently and effectively protected. The percentage of couples effectively protected in Bihar and Uttar Pradesh is below twelve percent. The credibility of the data from showcase states such as Maharashtra with a couple protection rate of 35.5 percent is doubtful with the recent finding of over four million condoms unaccounted for and reportedly sterilized women being pregnant (Karkaria, 1985).

2. Dais as Change Agents: In India, from the inception of the family planning program, trained dais who were once attached to the Maternal and Child Health clinics for further training, resupply of medicines and bandages and supervision, were asked to recruit adopters of family planning. Each dai was paid a small cash incentive for each adopter recruited. Their effectiveness as family planning recruiters was disappointing. The average dai persuaded only one IUD acceptor per month.
Table 12
Percentage of Eligible Couples Currently and Effectively Protected by Family Planning in India by States, 1981

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage of Eligible Couples Protected</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Currently</td>
<td>Effectively</td>
</tr>
<tr>
<td>INDIA</td>
<td>24.4</td>
<td>22.8</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>27.3</td>
<td>27.1</td>
</tr>
<tr>
<td>Assam</td>
<td>18.7</td>
<td>18.5</td>
</tr>
<tr>
<td>Bihar</td>
<td>12.0</td>
<td>11.8</td>
</tr>
<tr>
<td>Gujarat</td>
<td>35.1</td>
<td>33.5</td>
</tr>
<tr>
<td>Haryana</td>
<td>32.0</td>
<td>29.2</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>24.4</td>
<td>23.6</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>10.6</td>
<td>10.2</td>
</tr>
<tr>
<td>Karnataka</td>
<td>24.6</td>
<td>23.8</td>
</tr>
<tr>
<td>Kerala</td>
<td>30.2</td>
<td>29.9</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>21.8</td>
<td>21.0</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>36.2</td>
<td>35.5</td>
</tr>
<tr>
<td>Manipur</td>
<td>10.7</td>
<td>10.2</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>6.2</td>
<td>6.1</td>
</tr>
<tr>
<td>Nagaland</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Orissa</td>
<td>24.8</td>
<td>24.4</td>
</tr>
<tr>
<td>Punjab</td>
<td>27.6</td>
<td>25.2</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>14.1</td>
<td>13.8</td>
</tr>
<tr>
<td>Sikkim</td>
<td>10.1</td>
<td>9.8</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>28.8</td>
<td>28.3</td>
</tr>
<tr>
<td>Tripura</td>
<td>9.1</td>
<td>8.9</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>11.9</td>
<td>11.1</td>
</tr>
<tr>
<td>West Bengal</td>
<td>22.6</td>
<td>22.1</td>
</tr>
</tbody>
</table>

Since the dai was used even by elite women for massage, even though some women would have had their deliveries in hospitals, she was expected to be a major recruiter of IUD adopters. Rogers and Solomon (1975: 26) list a number of reasons for the failure of dais to be effective change agents.

First, dais were of very low social status often belonging to the barber and sweeper castes. Hence they were considered polluting and thus did not have homophily with the majority of the rural women. The few women they managed to persuade usually belonged to their own castes. It was almost unheard of for dais to talk to men about family planning. Secondly, the dais were given a very brief training course, with a main emphasis on improved methods of child delivery; this was inadequate to prepare them for family planning duties. Thus they had no competence credibility with the clients. In some instances the dais instrument kit made her stand apart from her clients undermining her safety credibility as well (Abraham, 1977).

Third, the immediate supervisors of the dais were often government auxiliary-nurse-midwives (ANM) in local clinics, who were usually young, unmarried women with some high school education and two years of training in public health and family planning. The dais seldom had much respect for their young supervisors. Also the incentive payments may have been too small to offset the loss of dai's child delivery fees. In some cases dais even spread anti-IUD rumors. Thus there was no safety credibility as well.

Despite all these drawbacks, there have been instances where dais have been trained in hygienic delivery methods and have been found to
be successful as promoters of primary health care (Kumar, 1983). The "Alternative Model of Health Care" proposed by the ICSSR/ICMR joint committee also recommends the proper training and utilization of dais in rural medical care (1981: 107). The Dais Training Scheme has been vastly expanded from April 1977 along with the Community Health Volunteer Scheme, with the ultimate target of one trained dai in each of the 580,000 villages in the country by 1983 (Ministry of Health and Family Welfare, 1980). In the absence of trained medical help during delivery dais may be better than nothing. However, their effectiveness as an important change agent in rural health care is minimal.

According to the latest available information, 352,873 dais had been trained since the inception of the scheme, as on September 30, 1981. During 1980-81, 69,155 dais have been trained against a target of 91,966. The target for 1981-82 was 88,500 (Ministry of Health and Family Welfare, 1982: 19).

3. Impact of Health Guides: The most important scheme, as far as rural health and people's participation are concerned, as announced by Raj Narain—the controversial health minister in the newly elected Janata government—on April 20, 1977. Soon after he took charge, Narain announced the Community Health Worker Scheme, whereby one male or female worker per village or 1000 people would be trained to administer medicines for minor ailments as well as carry out promotional and preventive health care within the village. Some hailed this as a radical scheme while others questioned the
feasibility of training such a large number of people in so short a time.

The Medical Association of India, the voice of physicians in India, in its national conference held in Bombay in 1977, openly registered its opposition to the scheme. Soon there followed a spate of editorials and articles in newspapers and magazines suggesting that the government was "abandoning the health of the rural poor to quacks." Deliberation at the conference of physicians also suggested that medical doctors were the only persons competent to take care of the health of the people and if doctors were unwilling to serve in rural areas under existing conditions, larger financial incentives should be provided (Karkal, 1982: 252).

In the words of a district health officer, "[T]he scheme (for community health workers) is a premature baby. Its survival requires a lot of special care, but who can give that kind of care? We in the health department barely have enough time to supervise our own staff... the idea is good, no doubt, but a seed is only as good as the soil into which it is put. Someone should be there for the weeding" (Nichter, 1980: 37). Such pessimism on the part of the authorities who were to implement the scheme was not unwarranted due to the haste with which the scheme was announced. The fact however remains that Karan Singh, the health minister in the Congress ministry before the Janata government came to power in 1977, had shown interest in the successful experiments by a number of voluntary organizations in effectively training village health workers. Thus Raj Narain was only hurrying up with something which was actually being planned for
possible implementation by the health ministry. Had it not been for
the sudden announcement, it may have taken years before the
bureaucracy came up with something to implement without political
prodding.

As expected with such hurried efforts, the community health
worker scheme did not really succeed as planned by the Janata
government which itself was in power only for thirty months. A number
of evaluation studies noted that the scheme, though well-intentioned
and with great potential, did not become an overnight success (Maru,
1983: 1480). Less than ten percent of the community health volunteers
selected and trained were women thus making them heterophilous with
the main target groups in rural health care—women and children. They
were paying less attention to prevention, promotion, maternal and
child health, nutrition and health education with more attention on
family planning. The main impact of community health volunteers was
in family planning persuasion. It should be granted, however, that
one of the reasons for the drop in infant mortality rates from 127 per
1,000 live births in 1978 to 94 in 1982 (Table 7) must be the
introduction of these volunteers in the villages. The emphasis of the
government on recruiting more women as health guides is another
encouraging sign.

G: Summary

We have given a general overview of the health care system in
India as a knowledge utilization system. We have noted that while
some achievements have been made, especially in the field of family
planning, despite some drawbacks, there are still many problems to be properly addressed. Problems such as malnutrition and lack of environmental sanitation are still rather neglected. Investment in health has been steadily declining while there is promise of greater allocations in the next five year plan. Family planning continues to be the primary focus of the government health care effort and will remain so. Introduction of community health volunteers, now renamed health guides, has shown some encouraging results though women are still not primarily recruited for this purpose. Dais have not been as successful as they could have been as change agents due to lack of homophily with adopters. Even though there is much discussion and debate on how to achieve "Health for All by 2000 AD" it may be more of a dream than a reality despite well laid-out plans.
1. Only the major Committee reports which set policy directions in the area of health are discussed here.

2. Mr. Sanjay Gandhi, Prime Minister Mrs. Indira Gandhi's younger son, though not a member of her cabinet, was reputed to be the force behind the compulsory sterilization drive launched throughout India during the "emergency" period.


4. Ibid.
Chapter V

CASE STUDY OF A GOVERNMENT HEALTH CARE DELIVERY SYSTEM
AS A KNOWLEDGE UTILIZATION SYSTEM

In this chapter we shall discuss the Ahmednagar district health care system as a knowledge utilization system. As we discussed in chapter III, we selected the Ahmednagar district as our case study of a government system. Being a chronically drought hit area, Ahmednagar is one of the poorer districts in Maharashtra State. A major portion of the district lies in the zone of low rainfall, i.e., 508 mm. to 635 mm. annually. Six out of the thirteen talukas of the district are prone to scarcity as frequently as once in three years—Shrigonda taluka and Rashin circle of Karjat taluka, once in six years—Parner, Ahmednagar, and Karjat (excluding Rashin circle) talukas, and once in ten years—Sangamner, Pathardi and Jamkhed talukas (Census of India 1961, 1965: 2). Six talukas of the district (Akola, Kopargaon, Shrirampur, Rahuri, Newassa, and Shevgaon) have fertile soil and with the introduction of irrigation facilities have developed rich cash crops such as sugarcane. These talukas are free from scarcity conditions.

The district has been showing average population growth after some disastrous years in the early part of the century. During the decade of 1901-11 the population of the district had increased by 12.86 percent after recovering from the great famine of 1900 (Table 13). The fall by more than 22 percent in the following decade was due to the severe influenza epidemic of 1918 and also the exodus of the
population at the time of the 1921 Census from the district due to severe famine. The increase of 34.77 percent in the next decade (1921-31) is explained by the return of migrants to their homes and recovery from influenza epidemic. Since 1931 the population has been growing steadily.

Within the district itself population growth has not occurred uniformly in all the talukas. Kopargaon, Rahuri and Shrirampur talukas have shown high increase due to the extension of canal irrigation and sugarcane cultivation leading to increase in the number of sugar factories which attract a large number of seasonal laborers from other talukas in the district and from outside (Table 14).

Pathardi taluka, which we studied in detail, has low population growth due to scarcity and the resulting seasonal migration to other areas for work especially in sugar factories (Census of India 1961: 11). During the first round of the Census 1981 only 148,381 persons were living in the taluka, the rest having migrated for work elsewhere. This is only a 7.06 percent increase from 1971. The second round of Census listed 165,504 persons as resident in the taluka which is a 19.4 percent increase over 1971. The taluka also had 17,381 scheduled caste persons and 2,178 scheduled tribe persons in 1981.
Table 13  
Population Growth in Ahmednagar District, 1901 - 1981

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Decade Variation</th>
<th>Rate of Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>820,346</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1911</td>
<td>925,876</td>
<td>+105,530</td>
<td>12.86%</td>
</tr>
<tr>
<td>1921</td>
<td>719,137</td>
<td>-206,739</td>
<td>-22.33</td>
</tr>
<tr>
<td>1931</td>
<td>969,209</td>
<td>+250,072</td>
<td>34.77</td>
</tr>
<tr>
<td>1941</td>
<td>1,123,040</td>
<td>+153,831</td>
<td>15.87</td>
</tr>
<tr>
<td>1951</td>
<td>1,410,873</td>
<td>+287,833</td>
<td>25.63</td>
</tr>
<tr>
<td>1961</td>
<td>1,775,969</td>
<td>+365,096</td>
<td>25.88</td>
</tr>
<tr>
<td>1971*</td>
<td>2,269,034</td>
<td>+493,065</td>
<td>27.76</td>
</tr>
<tr>
<td>1981**</td>
<td>2,711,216</td>
<td>+442,182</td>
<td>19.49</td>
</tr>
</tbody>
</table>


Table 14
Population Growth in Ahmednagar District, 1961-81, by Taluka

<table>
<thead>
<tr>
<th>Taluka</th>
<th>Population 1961</th>
<th>% variation over 51</th>
<th>Population 1971</th>
<th>% variation over 61</th>
<th>Population 1981</th>
<th>% variation over 71</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kopergaon</td>
<td>197,512</td>
<td>38.3</td>
<td>262,619</td>
<td>33.0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Akola</td>
<td>117,795</td>
<td>22.6</td>
<td>147,702</td>
<td>25.4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Sangamner</td>
<td>164,564</td>
<td>24.8</td>
<td>218,797</td>
<td>33.0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Shrirampur</td>
<td>178,174</td>
<td>32.9</td>
<td>247,551</td>
<td>39.0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Rahuri</td>
<td>117,728</td>
<td>35.4</td>
<td>159,343</td>
<td>35.4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Newassa</td>
<td>117,706</td>
<td>27.9</td>
<td>150,393</td>
<td>27.8</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Shevgaon</td>
<td>104,207</td>
<td>18.3</td>
<td>128,841</td>
<td>23.6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Parner</td>
<td>131,039</td>
<td>23.5</td>
<td>154,890</td>
<td>18.2</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Nagar</td>
<td>245,581</td>
<td>19.1</td>
<td>303,606</td>
<td>23.6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Shrigonda</td>
<td>118,313</td>
<td>24.5</td>
<td>146,581</td>
<td>23.9</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Karjat</td>
<td>99,292</td>
<td>33.0</td>
<td>123,612</td>
<td>24.5</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Pathardi</td>
<td>110,905</td>
<td>13.7</td>
<td>138,590</td>
<td>25.0</td>
<td>165,504*</td>
<td>19.4</td>
</tr>
<tr>
<td>Jamkhed</td>
<td>73,153</td>
<td>23.2</td>
<td>86,592</td>
<td>18.9</td>
<td>94,834*</td>
<td>9.5</td>
</tr>
<tr>
<td>AHMEDNAGAR</td>
<td>1,775,969</td>
<td>25.9</td>
<td>2,269,034</td>
<td>27.8</td>
<td>2,711,215*</td>
<td>19.5</td>
</tr>
</tbody>
</table>


*Census of India 1981. Provisional Figures. (obtained from respective taluka offices; data for other talukas not available)
There are no all-weather motorable roads to all the villages in the taluka (See Plate 2 for a map of the taluka showing villages and other health facilities visited for study). Drinking water is available in most of the villages. However, due to acute drought, drinking water supplies were inadequate in many villages in recent years, and had to be provided through small bullock-drawn tankers. People living in most small villages, unless situated on a bus route, have to walk up to five miles to catch a bus to visit a hospital or a doctor.

Having briefly described its general characteristics, we shall proceed to discuss the government health care delivery system as a knowledge utilization system in Pathardi taluka. We shall follow our descriptive six-stage model of knowledge utilization for this purpose. In this discussion we shall draw upon data gathered during field research.

We selected four villages in the taluka for more detailed study. Table 15 presents characteristics of these four villages. We spent at least one day in each village observing, talking to villagers, and interviewing selected people. We also spent several days at the taluka headquarters at Pathardi and at the civil hospital there, and one day at the Tisgaon primary health center. We had occasion to meet all the government doctors working in the taluka and a number of para-medical personnel at an Eye Camp at Kharvandi, one of the villages we studied. We have discussed our visit to the Eye Camp in some detail in chapter III.
Plate 2: Map of Pathardi Taluka Showing Villages and Health Facilities Visited for the Study

1. Kharvandi Village
2. Pathardi Taluka Civil Hospital
3. Paghori-Pimpalgaon Village
4. Tisgaon Primary Health Centre
5. Deorai Village
6. Karanji Village

Table 15

Characteristics of Villages Selected for Study

<table>
<thead>
<tr>
<th>Village</th>
<th>Population</th>
<th>Distance to</th>
<th>FBus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deorai</td>
<td>615</td>
<td>795</td>
<td>834</td>
</tr>
<tr>
<td>Karanjji</td>
<td>3,166</td>
<td>3,595</td>
<td>3,439</td>
</tr>
<tr>
<td>Kharvandi</td>
<td>6,390</td>
<td>6,390</td>
<td>2,814@</td>
</tr>
<tr>
<td>P.P.Gaon</td>
<td>1,255</td>
<td>1,389</td>
<td>1,880</td>
</tr>
<tr>
<td>Pathardi</td>
<td>11,040</td>
<td>14,281</td>
<td>12,456</td>
</tr>
<tr>
<td>Tisgaon</td>
<td>2,665</td>
<td>3,327</td>
<td>3,425</td>
</tr>
</tbody>
</table>

NHF = Distance in kilometers to nearest government health facility
NGHF = Distance in kilometers to nearest non-government health facility
PHC = Distance in kilometers to primary health center
FBus = Frequency of daily bus service

* Census 1981 first round
+ Census 1981 second round
@ Village bifurcated recently, hence the much lower population now.

Table 16
Types of People Interviewed in the Government Health Care System,
Ahmednagar District

<table>
<thead>
<tr>
<th>Type of Person</th>
<th>Number</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Leaders</td>
<td>7</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Patients</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Community Health Volunteers/Health Guides</td>
<td>6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Multi-purpose Worker</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Sweeper/nurse's Aide</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Auxiliary-nurse-midwife</td>
<td>4</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Staff Nurse</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Vaccinator</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Sanitary Inspector</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Leprosy Technician</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Coordinator</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Government Medical Officers</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>District Health Officer</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Block Development Officer</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Tensildar</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Chairman, Zilla Parishad Health Committee</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Private Medical Practitioner</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

TOTAL                                    | 40     | 25   | 15     |
In all, we interviewed 40 persons involved with the district and taluka level health care delivery system. Table 16 presents the kind of people who were interviewed. We observed some of these at work. All were forthcoming and cordial with their answers.

A. Problem Identification

In this section we shall focus on the general health status of the people in the taluka, and how it is perceived by the policy makers and the clients. The area which we shall specifically explore is people's attitude towards health and illness based on our observations and interviews. Due to high illiteracy and a strong traditional social structure, people hold on to much non-positive knowledge about health and illness.

1. Illness as Curse of Gods

It is generally known that rural people believe that illnesses are a result of the wrath of gods. This was strengthened in the past when many diseases were fatal and immunizations and cures were not available. Even though medicines can cure most illnesses, this belief is still prevalent among villagers. This is borne out by answers to our question whether people still believed illnesses to be curse of gods. Some of the answers, summarised below, support this view.

1. Before the Rural Health Center was started there was smallpox. People used to die, due to taking any medicine at home. They used to give khada [left-over water after washing rice] for small pox, and offered coconuts to gods (P6: Mr. Ramrao N. D., 40, Police Patel).

2. People may give offerings to gods when they get sick. So what? (P7: Mr. Sheikh V. B. P., 42, Muslim, Deputy Sarpanch).
3. People do go to gods when they are sick, say they are attacked by the evil spirits. They give offerings to gods. Then they come to me (P30; Smt. Suman B. B., 27, Auxiliary nurse midwife).

4. People do go to temple. They say sicknesses are due to will of god. Some think it is some ghost's work (P32: Mr. Rambau T. M., 35, Vaccinator).

5. I have not seen people offering sacrifices etc. when they are sick. People come to hospital after four or five days after something happens like a wound etc. When they get jaundice they wear some beads. If children get stomach ache, they say, 'some spirit has come.' Seven apsaras are the goddesses of the village. They do cut chicken, goats etc. for the gods. When pregnant women get sick they say, 'ghost came.' When they get too sick, they come to the health center. We ask them what they took on behalf of gods and then give medicines (P35; Smt. Vijaya V. S., 18, Sweeper, Rural Health Center, doubles as aide to the ANM now).

6. They believed that TB was a curse of god (P42: Mr. N. G. P., 38, Coordinator, Primary Health Center).

7. We try to convince people that these things are not true. It is not god but medicine that would cure them. Such belief is more prevalent among the uneducated (P52: Mr. Bhansibau M., 40, Chairman, Zilla Parishad Health Department).

8. People go to gods before coming to us. They do this for two or three days and then come to the doctor (P55: Dr. Shivaji P. K., 25, Diploma in Homeo Medicine and Surgery, Private Practitioner).

2. Delay in Seeking Medical Help

Doctors, nurses and other paramedical staff pointed out that patients often did not go to the hospital promptly. Some go to temples and give offerings to gods while taking medicines provided by local medicine men. Others go to hospital as well as to temple. At the taluka hospital we observed two cases of minor accidents where the patients were brought to the hospital nearly twenty four hours after the accident.
Case One: An old lady in her sixties with a gaping wound on her head. She had fallen down inside the house due to infirmity some twenty four hours ago. But she was not brought to the hospital right away because her son and his wife were working. The doctor tells us that villagers do not seek immediate medical help, even if they could have. The old lady's wounds have been infected.

Case Two: An eight year old boy from a village about five miles from the hospital had kerosene poisoning yesterday at about 3 pm. He has been brought to the hospital today at 4.30 pm even though the hospital is open in the evenings from six to eight.

The problem often is that people who have to avail of the government health care facility are too poor to hire a motor vehicle, if at all one is available in the village, to bring an accident victim to the hospital. Bus services to most villages are available only once or twice a day. Many villagers are too poor to afford even the bus fare. Often they have to save a little from their daily wages for a week or more to visit a hospital where the services and simple medicines are free. Both husband and wife usually work for daily wages leaving young children under the care of older siblings, and cannot afford to lose a day's wages to go to the hospital unless the need is very urgent.

3. Lack of Environmental Sanitation

General lack of environmental sanitation is a major cause of diarrhoeal diseases in the rural areas. Community leaders as well as health personnel are aware of this even though they seem unable to do much to prevent it. Some of the answers to our question regarding toilet facilities and waste disposal amplify this point.
Q: What are the health-related problems in the village?

1. A: There are too many flies, nobody comes and puts any medicines in water. Panchayat has to do it. What can doctor do about it (P3: Smt. Harnabai V. G., 45, Laparactomy patient).

2. A: Peon gets very little. So very little can be done about cleanliness. People sit here and there for defecating (P7: Mr. Sheikh V. B. P., 42, Deputy sarpanch).

3. A: There are no gutters. People use open space for defecation (P8: Mr. Yakub B. P., 30, School teacher).

4. A: Our major problem in lack of latrines. People go to the fields, children sit around houses (P9: Mr. Manikchand B. K., 35, Shop keeper).

5. A: Most farmers keep waste in corners of the yard to make manure for the fields (P10: Mr. Bhujangrao T. P., 55, Sarpanch).

6. A: There are no latrines. People go to the fields. Waste is also disposed off in the fields (P11: Mr. Dinkarrao B. A., 50, Police patel).


8. A: People defecate indiscriminately in town and villages. Villages lack gutters and hence sanitation. People throw waste near house to make compost. We advise people to be clean, keep environment sanitary etc. If there are one or two educated people in the family, cleanliness improves (P33: Mr. Bhagavan S. P., 30, Leprosy Technician).

9. A: There is so much filth in the village. So I tell people to clean it up and what happens because of filth. There are no latrines in the village (P34: Smt. Aruna B. K., 26, Auxiliary Nurse Midwife).

4. Poverty and Accessibility

Doctors were aware of the problem of people's accessibility to their services. One of them suggested:

People are not educated. People are not in a position to accept new concepts. We have to teach them. We have to promote them, we have to change their mind, their attitude. That is the main difficulty. We have to reach the people. Sometimes there is inadequate availability of vehicles.
Rural people are available in the morning or evening. People who are a little educated will go and get medicines. But here people wait. They come in the last stage. Poverty is common. So that is also a problem (P56: Dr. Ashok V. N., 28, Medical Officer, PHC).

B. Problem Definition

Thus the medical personnel, community leaders, and people in general are aware of the problems of health due to non-positive knowledge, illiteracy, lack of environmental sanitation, and general poverty. Thus it would seem that the second stage in knowledge utilization, i.e., problem definition should be easy.

To our question regarding specific health problems of the village, answers were often vague and non-specific. Here are a few examples.

1. Q: What are some of the health-related problems in the village?
   A: Panchayat has no money for sandas, gutter etc. If government gives we can do something (P7: Mr. Sheikh V. B. P., 42, Deputy sarpanch).

2. Q: What do you do about cleanliness and sanitation in the village?
   A: What can we do about cleanliness and sanitation? We have a sweeper.
   Q: Do you have latrines in every house?
   A: No latrines. Nothing can be done. We try, but gram panchayat does not have much income. We have made proposal. They have approved, but no money yet.
   Q: Can the panchayat samiti do something about it?
   A: Panchayat samiti will build four walls for latrines, but they will not give salary for person to clean the latrines.
Q: How about sanitation, gutters for example?
A: We have taken a loan from the Zilla Parishad to build gutter, but no cement was available. So work is incomplete. We have told BDO, ZP etc. It could have been completed if we had the cement. They tell us, 'we will give, we will give' (P10: Mr. Bhujangrao T. P., 55, Sarpanch).

3. Q: What are some of the health-related problems in the village?
A: Zilla Parishad's Rural Health Committee Chairman is from this village. There was a dispensary in 1942 when local committee was there. When there was no road, it used to take four to five hours to reach Pathardi. Now there are State Transport buses and emergencies can be taken to Pathardi (P11: Mr. Dinkarrao B. A., 50, Police patel).

4. Q: Do you have safe drinking water in the village?
A: About drinking water in the village, who has time to look into all that. There is a doctor in another village one mile away from my village. If serious we go to Shevagaon [10 miles] or to Pathardi [10 miles]. State Transport bus comes to Akrigaon [one mile] (P12: Mr. Baburao S., 60, Eye patient).

Doctors were able to pinpoint the problem of lack of accessibility by rural people to services. But they were not forthcoming with any solution to the problem. One of them said:

Patients do not take treatment regularly. There are many factors as far as treatment is concerned. Patient is staying far away from the PHC; so he cannot afford to come to the PHC. Secondly due to irregular dose of medicine, there is drug resistance, patient does not get relief during particular time. This contributes to our failure. Not so much to failure but inability to cure the patient (P56: Dr. Ashok V. N., 28, Medical Officer, PHC).

In the opinion of a school teacher the problem now is not superstitions but resistance to family planning.

Sickness is no more considered a curse of god. But if people do not have children, they go to temple and give offerings. People don't care much about family planning (P8: Mr. Yakub B. P., 30, School teacher).
The general perception among community leaders seems to be that providing health care is the responsibility of the government. Year after year panchayats ask the Zilla Parishad for money with little or no success. We did not come across any village leader who suggested that they were going to do anything all by themselves. Thus it would seem that much of the problem definition, and thus problem specification is done by the policy makers at the district, state or even national levels. At the taluka level, implementation is the main function.

C. Problem Specification

Health problems to be tackled at the taluka level through the primary health centers are defined, specified into targets and funds allocated from the state level. We asked the district health officer about who fixed the targets for him. He replied:

Q: Who fixes your targets?
A: In order to give more work to the people targets are fixed. Maharashtra state health service fixes the target considering total population, total birth, and how many children are born. By considering all this, and other factors targets are fixed. How many families, how they have done their work earlier, considering these two factors the target for family planning is fixed. Are there doctors, nurses, and auxiliary personnel also will be considered.

Q: Is the finance adequate for the district?
A: Finances are allocated as per requirements each year. Finance for each PHC last year was Rs. 12,000 and this year Rs. 15,000. The increase in grants leads to increase in distribution of medicines. This financial grant is sufficient. Preventive measures are stressed more. The medicines they give for the people are not at all sufficient for them (P50: Dr. Prakash V. B., 45, District Health Officer).
Even though the District medical officer felt that there are adequate grants for the operation of the PHCs he did point out that sufficient medicines are not available for free distribution. The Block Development Officer, who is in charge of the development activities of the block, which comprises the whole Pathardi taluka, including drinking water and environmental sanitation, also emphasized the lack of adequate finances. According to him most panchayats are poor and do not have enough income to build and maintain latrines, or sewage systems or piped drinking water supplies—all important in promoting good health.

The district health officer has a clear mandate as to what his goals and objectives are. He listed these for us.

Maternal and child health, leprosy, TB, diarrhoea, malaria, blindness, and fever are to be looked after and brought under control. We have to conduct family planning operations, to distribute free contraceptives such as tablets, nirodh [condoms], copper T, operations, mother and child welfare; to inoculate the children with triple antigen against polio, tetanus, and whooping cough; to distribute tablets containing iron and vitamins to prevent blindness in children. About 62 percent people in this district suffer from vitamin A deficiency. Eye problems are found more among women and children. To prevent this regular check-up is done. We have to make arrangements for deliveries at hospital or at home and to take care of children and mother after delivery. Blood TB and anaemia are found on a large scale in the rural areas, some steps are taken in this direction to prevent it. Contagious diseases are to be looked out for in the rural areas and are to be detected and medical help given (PSO: Dr. Prakash V. B., 45, District Health Officer)

Thus the goals, objectives and targets for each aspect of rural health are spelled out at the district level. Among these the priority is for family planning. Doctors, nurses and other health personnel attest to this.
D. Program Formulation

As we have already suggested, programs are formulated based on goals, objectives and targets set at national and state levels. The chief medical officer at the primary health center, Tisgaon, spelt out these very clearly for us.

Q: What are your duties as the chief medical officer of the PHC?

A: In government service we are given six national programs to be implemented. My main duty is the implementation of these programs.

First: National Family Planning Program. We do two types of operations to prevent birth—vasectomy and tubectomy. Secondly for spacing of births we give oral contraceptives. We also insert copper T. This is implemented through our periphery workers. We have in our tehsil 27 male workers and 18 nurses who work in their given area of about 5000 population.

Second: Maternal and Child Health. We give all kinds of immunizations to children of up to five years. Even up to twenty years. Secondly in MCH we take care of antenatal women. We immunise them, give them all kinds of tablets, iron and folic etc. Like that we take care of women as well as children. We give them vitamin A tablets.

Third: Malaria Program is mainly prevention. We do spraying (DDT). Field workers collect samples so that we can prevent cycles of malaria by finding out positive cases.

Fourth: Leprosy control. Preventive or rather control. We have leprosy technicians who do survey of a given population. They find the suspected cases of leprosy and bring them under control.

Fifth: TB control. We do sputum examination of those who have had fever and cough for two weeks. Our field workers visit these patients regularly. It is important that both TB and leprosy patients should be regular in taking medicine. Otherwise he becomes resistant and it is difficult to cure. Under TB, we do BCG inoculation of population under two years old. This is a routine job.
Sixth: Blindness prevention. There are two categories. (a) For children under five years. We give vitamin A solution to children under five every six months one dose. (b) For those above forty. There are ample chances of getting cataract. We organize eye camps. If patients have cataracts, we operate and remove it.

These are the six national programs we operate. Emphasis is laid on prevention of illnesses. We look after the sick, but we aim at prevention.

These six national programs cover almost all the major health problems of the rural areas. In order to implement all these programs efficiently various levels of medical and para-medical personnel have been recruited and trained. Figure 9 represents the organization chart of the government health care system at the block level with the primary health center as the focus.

One of the obstacles to providing adequate health care to all who need it is the lack of conveniently located facilities in rural areas. In order to achieve the goal of "Health for All by 2000 AD," each district has been asked to plan for setting up more primary health care centers and subcentres to reach all people more effectively. Table 17 provides the present and planned number of health care facilities in the district.
Figure 9
Organization Structure of the Block Level Health Care System

Chief Medical Officer (Primary Health Center)
- administers all activities under the PHC;
does curative and preventive work

Health officer
- family planning;
curative and preventive work

Health officer
- multi-purpose workers scheme
curative and preventive work

Block extension educator
- supports all health and family welfare programs in the block;
obtains all audio-visual aids for health education in the block
from the deputy district extension and media officer

Nurses, Sanitary Inspector, Multi-purpose Workers
- Trained para-medical workers attached to PHCs

Health assistant (male)
- to cover a population of 20,000; four subcentres to one health assistant (male)

Health assistant (female)
- to cover a population of 20,000; four subcentres to one health assistant (female)

Health worker (male)
- for a population of 5,000; visit each family once a month

Health worker (female)
- for a population of 5,000; visit each family once a month

Community health volunteer (health guide)
- one per 1,000 population; from the same village;
under the technical guidance of health worker

Dais (Traditional birth Attendants)
- have been trained and provided with sanitary delivery kits

Table 17
Existing and Planned Health Facilities in Ahmednagar District

<table>
<thead>
<tr>
<th>No.</th>
<th>Taluka</th>
<th>Population in 1984*</th>
<th>Existing Health Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N. Taluka PHC PHU Disp SC</td>
<td>AHMEDNAGAR 2,804,713 18 21 10 279</td>
</tr>
<tr>
<td>1.</td>
<td>Nagar</td>
<td>219,630</td>
<td>1 2 - 20</td>
</tr>
<tr>
<td>2.</td>
<td>Rahuri</td>
<td>186,814</td>
<td>1 2 - 22</td>
</tr>
<tr>
<td>3.</td>
<td>Shrirampur</td>
<td>281,862</td>
<td>2 - - 25</td>
</tr>
<tr>
<td>4.</td>
<td>Newasa</td>
<td>221,407</td>
<td>1 - 2 17</td>
</tr>
<tr>
<td>5.</td>
<td>Sheoqaon</td>
<td>182,679</td>
<td>1 - - 21</td>
</tr>
<tr>
<td>6.</td>
<td>Pathardi</td>
<td>223,555</td>
<td>1 2 1 19</td>
</tr>
<tr>
<td>7.</td>
<td>Jankhed</td>
<td>127,789</td>
<td>1 1 1 18</td>
</tr>
<tr>
<td>8.</td>
<td>Karjat</td>
<td>193,581</td>
<td>1 - 2 19</td>
</tr>
<tr>
<td>9.</td>
<td>Shrigonda</td>
<td>225,411</td>
<td>2 2 - 21</td>
</tr>
<tr>
<td>10.</td>
<td>Parner</td>
<td>190,211</td>
<td>1 1 1 19</td>
</tr>
<tr>
<td>11.</td>
<td>Sangamner</td>
<td>253,482</td>
<td>2 2 - 25</td>
</tr>
<tr>
<td>12.</td>
<td>Kopargaon</td>
<td>308,203</td>
<td>2 2 - 24</td>
</tr>
<tr>
<td>13.</td>
<td>Akola</td>
<td>190,093</td>
<td>2 7 1 29</td>
</tr>
</tbody>
</table>

* Estimated rural population
+ One primary health center for 30,000 people
@ One subcentre for 5,000 people

PHC = Primary Health Center; PHU = Primary Health Unit
Disp = Dispensary; SC = Subcentre

Table 17 (contd.)

Existing and Planned Health Facilities in Ahmednagar District

<table>
<thead>
<tr>
<th>No.</th>
<th>Taluka</th>
<th>Population in 1984*</th>
<th>Planned Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nagar</td>
<td>219,630</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Rahuri</td>
<td>186,814</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Shrirampur</td>
<td>281,862</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Newasa</td>
<td>221,407</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>Sheogaon</td>
<td>182,679</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Pathardi</td>
<td>223,555</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>Jamkhed</td>
<td>127,789</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Karjat</td>
<td>193,581</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Shrigonda</td>
<td>225,411</td>
<td>7</td>
</tr>
<tr>
<td>10</td>
<td>Parner</td>
<td>190,211</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>Sangamner</td>
<td>253,482</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>Kopargaon</td>
<td>308,203</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Akola</td>
<td>190,093</td>
<td>6</td>
</tr>
</tbody>
</table>

AHMEDNAGAR 2,804,713 63 587

* Estimated rural population
+ One primary health center for 30,000 people
© One subcentre for 5,000 people
PHC = Primary Health Center; PHU = Primary Health Unit
Disp = Dispensary; SC = Subcentre

E. Program Implementation

Programs to be implemented are clearly laid out, administrative machinery set up and finances allocated at the district level. It is even easy to plan the number of health facilities that will be needed to achieve targets as laid out in Table 17. Programs are implemented at the primary health center level which is the focus of rural health activities. We shall now look into the process of program implementation with particular attention to the various problems that have been reported to us. We shall also look closely into the role of the change agents who implement these programs. As per our conceptual model, for knowledge utilization effectiveness which ultimately leads to rural development, the role of the change agent is immediate and crucial. Since the community health volunteers (health guides) are the most recent change agents introduced in the system we shall look more closely at their impact.

1. Family Planning

At the district and the primary health center level, most attention is given to family planning efforts. Targets of sterilizations and contraceptives to be distributed are set at the state level and relayed to the district. It is almost a matter of prestige for a district or a primary health centre to be in the forefront in this effort. One of the doctors at the primary health center is appointed solely for family planning.
One of the more successful ways of implementing this program has been through family planning camps. According to the chief medical officer this is how they organise it:

Family planning program is already chalked out. Prior to having a camp, we plan a month ahead. We have the MPWs and CHVs. We have meetings of these workers and tell them about the camp, on such and such a day there will a camp etc. They go from house to house, it is their routine job. So they publicize this thing from house to house. And we print some pamphlets and distribute them among the people.

We also conduct OTCs (organization training camps). We have got 14 subcenters under our PHC. In these subcentres we conduct OTCs. In this camp we call people, we try to understand their problems in implementing this program. We take the help of the community. We get cooperation from people through OTCs. Then we have panchayats. If we have such a camp, we appeal to panchayat members that as elected members they should appeal to people to take part. We take the help of the revenue department also. They have also got workers. They have gram sevaks [village level workers]. There are so many people who can do publicity for all these national programs (P54: Dr. Arun B. H., 31, Chief Medical Officer, PHC).

According to a para-medic, who wished to remain unidentified, the government officers do not always take the information supplied by the field staff. According to him, this is what happened at a family planning camp:

There was a family planning camp at Pathardi. Eight hundred people came. Management had made arrangements for only 200 in spite of field staff telling that many more than 200 would come. This happens all the time. Fieldworkers know better. But administration does not take our advice. Often vehicles are not made available on time (P60: Informant not to be identified)

We had occasion to observe and talk to women who had undergone laparactomy. The sanitary conditions in the post-operative ward in the taluka civil hospital at Pathardi were far from satisfactory.
Each of the six women who were recuperating after laparactomy had their babies and some older children with them. Some were also cooking their meals inside the room using a kerosene stove. The mattresses were torn and dirty with no covers at all. That evening one of the patients was having some post-operative complication, possibly due to the unsanitary environment. The backyard of the hospital was infested with flies from the dirty puddles formed out of water flowing from the septic tank and a leaking water tank. The hospital itself was situated in the middle of a large open field which is used as the weekly bazaar and an open toilet and garbage dump. Pathardi town which is the headquarters of the taluka does not have any sewage system and is infested with flies. The taluka panchayat has no money to build gutters or for daily cleaning. Under such conditions some patients do develop post-operative complications.

2. Community Health Volunteers / Health Guides

The most important addition to rural health care delivery system in the last decade has been the introduction of community health volunteers, now known as health guides. We have discussed in some detail in chapter Four how the scheme was planned and introduced. Ahmednagar district has been selected for special efforts to recruit women as health guides under the leadership of Drs. Raj and Mabelle Arole, founders of the Comprehensive Rural Health Project at Jamkhed, which we shall discuss in detail in the next chapter. Some of the health guides we interviewed in the Pathardi taluka were already selected and trained by the Jamkhed project.
Health guides are primarily for improving maternal and child health which is one of the priority program of the government. Originally most of the community health volunteers selected have been men and they are not very effective in maternal and child health. Even though there was no stipulation that men should be selected as community health volunteers the requirement of high school attendance made it difficult to find women with such qualification. Also the Rs. 60 given as honorarium was an attractive income for a male high school graduate for a few hours of voluntary work every day. In a male dominated society, women would not come forward to volunteer as health guides. This was the case with all the female health guides we interviewed. But once they were selected and trained they have proved to be knowledgeable and efficient as we can gather from their discussions with us:

1. Q: What were you doing before becoming a community health worker?

   A: I was working on farm. My village people sent me for training though I was not willing. For eight days I was crying at the training center. There was one month training at Kharvandi and Jamkhed.

   Q: What were you taught there?

   A: In the beginning we were preparing Ayurvedic medicine. We were taught to treat children. Then they provided us with knowledge of diseases of children and how to take care of pregnant women and give medical help to them (P24: Smt. Rukmini V. G., 36, CHV).

2. Q: What did you learn during training?

   A: Doctors taught us about delivery, broken bones etc. They also told us about TB, leprosy. In delivery we are taught not to touch the child until the head of the child appears. We learnt what pregnant mothers and children should eat, what vitamins should be taken etc. (P21: Smt. Phulabai U. M., 30, CHV).
3. Q: Are you happy with your work now?

A: Yes. I was not willing to go for training at first. I felt that as I am not educated if would be impossible for me to learn everything. People were telling that these trainees were called for cleaning clothes of the patients. But when we started to tell people about many things they were surprised and happy (P24: Smt. Rukmini V. G., 36, CHV).

4. Q: What were you doing before becoming a CHV?

A: I was working on a farm.

Q: Where did you get training?

A: For one month at Jamkhed, and then at Kharvandi.

Q: Were you willing to go for training or did somebody force you?

A: Gramsevak [village level worker] told me to go. I was not willing to go. So he forced me.

Q: What was the training about?

A: How to take care of pregnant women and infants. How to make drinking water safe. To find out whether anyone in the village is sick. Whether the person is male or female, how medicine is to be given. To keep record of birth and death. These things were covered in training.

Q: If there is any widespread disease what do you do?

A: We purify the drinking water. We ask the doctors to give vaccinations. We give medicines to people (P25: Smt. Gautabai S. B., 34, CHV).

5. Q: Did you go for training willingly or did someone force you to?

A: Gramsevak asked me and I went.

Q: How long was the training, and what were you taught?

A: One month in Jamkhed and two months in Kharvandi. We were taught how to take care of infants and their diseases. How to keep women's health. How to dig soak pits. Why it is necessary to avoid diseases. Also to keep drinking water clean and pure. We also got information on all kinds of diseases and how to treat them.
Q: What is your daily routine of work?

A: I visit for one and half hours every morning and evening every home and convince people to take up family planning. We check up pregnant women. We see if anybody has blood pressure and send urine sample to hospital. We give them medicines. People also come to us. We tell people how to remain calm and to keep food well stored or how flies will sit on it and contaminate it. We tell them to eat potato, radish, vegetable, fruits etc. in the daily diet.

Q: What kinds of medicines do you have?

A: We have medicines for dysentery, headache, vomiting, medicine for children.

Q: Do you keep record of this?

A: Yes. Name of person, male/female, medicine provided; delivery date and death date record also is maintained (P26: Smt. Anjanbai S. D., 40, CHV).

We interviewed a male community health volunteer and a male multi-purpose-worker. Both were knowledgeable about their work. But their responsibilities were more towards curative care and family planning persuasion than towards maternal and child health.

1. Q: How were you selected as a CHV?

A: Panchayat samiti secretary selected me. Then the Block Development Officer interviewed me.

Q: What are your duties as a CHV?

A: I advise when to give triple dose, to give milk to children, etc. I surveyed the village to detect TB and leprosy. Every day I walk around the village twice. I go to each house. I give pills for fever. If not cured by my pills, I ask them to go to hospital. I have usually a stock of medicines for three months.

TCL powder is to be used for cleaning drinking water in the well. But so far no powder has been given (P20: Mr. Parasuram B. P., 35, CHV).
2. Q: How were you selected as a multi-purpose worker?

A: I was formerly working in a printing press in Bombay. When I came home on leave some members of the grampanchayat advised me to take up the multipurpose worker's job. Now I do some farm work on my own land also along with my father.

Q: What is your daily routine of work?

A: Daily I visit the village twice and give medicine to sick people, bandage wounds. Also I maintain birth and death register. I motivate one or two cases for family planning every month.

Q: Where were you trained?

A: I was trained at Tisgaon PHC for three months in family planning persuasion, and how to give ordinary medicines. If anybody is ill I bring them to the Rural Health Center in the village. I go to every house in the village. There is no private doctor in the village, there is no medical store either. But there is a state transport bus coming to the village twice a day and Pathardi is only eleven kilometres away. When medicines are over I tell my supervisor. There are three community health volunteers each having her own area.

Q: What are the priorities in your work?

A: Family planning; clean drinking water; environmental sanitation by building soak pits; teaching TB patients to keep away from others and have their mouth covered when coughing (P22: Mr. Suresh D., 28, MPW).

From the above profiles it is clear that the female health guides are more effective in maternal and child health as well as family planning persuasion. The medical officers acknowledge that health guides, especially women, are effective.

1. For every 1000 population there is a health guide [formerly known as community health volunteer--CHV] who is elected by the people. As the staff consists of more females, the work is done more efficiently. The government servants are helped by the health guide (P50: Dr. Prakash V. B., 45, District Health Officer).
2. Q: Did you have to change some CHVs?
A: Here we are finding that ladies are doing a finer job than male CHVs. So it is better that these male CHVs are replaced by females. These ladies can reach women in the village very closely. They are very bold. The males are not enthusiastic. They are not motivated (PS4: Dr. Arun B. H., 31, Chief Medical Officer, PHC).

F. Program Adoption

The final stage in the knowledge utilization system is program adoption. However well planned out the programs are, unless the target group, i.e., the people for whom the programs are operated, adopt them there will not be effective knowledge utilization and hence rural development.

1. Utilization of Curative Services

One of the main objectives of the primary health center is curing diseases. The number of patients treated by the primary health center is one indicator. Number of immunizations is another indicator of people actually utilizing the facilities. Table 18 presents data on number of outpatients treated and number of cholera inocculations at the Tisgaon primary health center. The primary health center is being utilized fairly well by outpatients as the data would indicate. Even though the number of outpatients seem impressive, there is a general complaint about lack of medicines at the primary health center. The doctors denied this allegation. They agreed that there may be occasional delays in getting some medical supplies.
# Table 18

Number of Outpatients Treated and Cholera Inoculation at Primary Health Center, Tisgaon, 1970-1981.

<table>
<thead>
<tr>
<th>Year</th>
<th>Outpatients Treated</th>
<th>% change over previous year</th>
<th>Cholera Inoculation</th>
<th>% change over previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>3,620</td>
<td>--</td>
<td>n. d.*</td>
<td>--</td>
</tr>
<tr>
<td>1971</td>
<td>5,442</td>
<td>50.33</td>
<td>n. d.*</td>
<td>--</td>
</tr>
<tr>
<td>1972</td>
<td>10,168</td>
<td>86.84</td>
<td>n. d.*</td>
<td>--</td>
</tr>
<tr>
<td>1973</td>
<td>12,888</td>
<td>26.75</td>
<td>66,691</td>
<td>--</td>
</tr>
<tr>
<td>1974</td>
<td>19,734</td>
<td>53.12</td>
<td>3,691</td>
<td>-94.47</td>
</tr>
<tr>
<td>1975</td>
<td>16,153</td>
<td>-18.15</td>
<td>20,547</td>
<td>456.68</td>
</tr>
<tr>
<td>1976</td>
<td>13,323</td>
<td>-17.52</td>
<td>21,592</td>
<td>5.09</td>
</tr>
<tr>
<td>1977</td>
<td>16,939</td>
<td>27.14</td>
<td>19,196</td>
<td>-11.10</td>
</tr>
<tr>
<td>1978</td>
<td>15,321</td>
<td>-9.55</td>
<td>11,021</td>
<td>-42.59</td>
</tr>
<tr>
<td>1979</td>
<td>27,611+</td>
<td>80.22</td>
<td>24,816</td>
<td>125.17</td>
</tr>
<tr>
<td>1980</td>
<td>21,020</td>
<td>-23.87</td>
<td>3,471</td>
<td>-86.01</td>
</tr>
<tr>
<td>1981</td>
<td>19,918</td>
<td>-5.24</td>
<td>8,687</td>
<td>150.27</td>
</tr>
</tbody>
</table>

* no data available

+ There was an epidemic of gastro-enteritis, a case of police firing, a major traffic accident, and a big case of food poisoning all raising the number of outpatients significantly.

In terms of the health facilities themselves, the Tisgaon primary health center is located in a corner of the taluka. A large village like Kharvandi, with a number of small villages around, and the nearest government health care facility eleven kilometres away, with no all-weather motorable road having but twice daily bus service could have been an ideal and deserving location for a health center. Under the proposed plan to build one primary health center for every 30,000 population Kharvandi has been promised a primary health center.

The physical conditions at the government health facilities could also be improved. The primary health center at Tisgaon is neat and tidy probably because the three doctors and the staff reside there. The taluka civil hospital at Pathardi, which is proposed to be upgraded to a cottage hospital, with a 30-bed capacity with x-ray facilities, is far from clean and healthy. Though ideally located right next to the town market, its surroundings are dirty and infested with flies.

2. Family Planning Adoption

Family planning is the most important promotive program at the district and primary health center levels. Maharashtra state has been in the forefront of family planning efforts even though there has been some doubts raised about the claims after the recent incident of "missing condoms" (Karkaria, 1985). Table 19 presents numbers of contraceptives distributed through the Tisgaon primary health center from 1966 to 1982.

As at the national level there has been a significant increase during the "emergency" period (1975-77) and a sudden drop soon after
due to the slackening of family planning promotion. Contraceptive
distribution has again increased at a tremendous rate recently. IUCDs
which were totally neglected for a decade are again being used. The
Tisgaon primary health center is doing even better in number of
sterilizations as per Table 20.

Again, following the national trend, there has been a significant
drop in the number of sterilizations after the "emergency" period. It
has picked up considerably since 1981. Also the shift from male
sterilization to female sterilization, a national trend, is clearly
evident here. One of the reasons may be the widespread distribution
and availability of allowing leading men to choose less permanent
forms of birth control. It could as well be that more and more women
are being persuaded to undergo sterilization as a result of the
introduction of female health guides coupled with the disrepute
connected with vasectomy after the episodes of forced sterilization
during the "emergency."

3. Impact on Maternal and Child Health

Lack of trained assistance at delivery has been one of the main
reasons for high maternal and infant mortality in rural areas. Child
birth was traditionally attended by a village midwife in rural India.
However they were not educated in sanitary practices which led to
deadly complications such as tetanus. The dais training program has
been one of the important schemes to improve this situation. However
they have not proved to be major change agents in rural health care.
<table>
<thead>
<tr>
<th>Year</th>
<th>Condoms distributed</th>
<th>% change from previous year</th>
<th>IUCD insertions</th>
<th>% change from previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966-67</td>
<td>--</td>
<td>211</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1967-68</td>
<td>--</td>
<td>44</td>
<td>44</td>
<td>-79.1</td>
</tr>
<tr>
<td>1968-69</td>
<td>712</td>
<td>--</td>
<td>35</td>
<td>-20.5</td>
</tr>
<tr>
<td>1969-70</td>
<td>592</td>
<td>-16.9</td>
<td>4</td>
<td>-88.6</td>
</tr>
<tr>
<td>1970-71</td>
<td>664</td>
<td>12.2</td>
<td>1</td>
<td>-75.0</td>
</tr>
<tr>
<td>1971-72</td>
<td>570</td>
<td>-14.2</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1972-73</td>
<td>1,377</td>
<td>141.6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1973-74</td>
<td>8,056</td>
<td>485.0</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1974-75</td>
<td>18,684</td>
<td>131.9</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1975-76</td>
<td>13,342</td>
<td>-28.6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1976-77</td>
<td>35,900</td>
<td>169.1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1977-78</td>
<td>21,651</td>
<td>39.7</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1978-79</td>
<td>33,790</td>
<td>56.1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1979-80</td>
<td>13,759</td>
<td>-59.3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1980-81</td>
<td>13,984</td>
<td>1.6</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>1981-82</td>
<td>98,276</td>
<td>602.8</td>
<td>19</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Vasectomy</th>
<th>As % of total</th>
<th>Tubectomy</th>
<th>As % of total</th>
<th>Total</th>
<th>% change from previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-76</td>
<td>1025</td>
<td>51.40</td>
<td>969</td>
<td>48.60</td>
<td>1994</td>
<td>--</td>
</tr>
<tr>
<td>1976-77</td>
<td>1843</td>
<td>66.95</td>
<td>910</td>
<td>33.05</td>
<td>2753</td>
<td>38.06</td>
</tr>
<tr>
<td>1977-78</td>
<td>19</td>
<td>13.97</td>
<td>117</td>
<td>86.03</td>
<td>136</td>
<td>-95.06</td>
</tr>
<tr>
<td>1978-79</td>
<td>41</td>
<td>9.93</td>
<td>372</td>
<td>90.07</td>
<td>413</td>
<td>203.68</td>
</tr>
<tr>
<td>1979-80</td>
<td>181</td>
<td>27.30</td>
<td>482</td>
<td>72.70</td>
<td>663</td>
<td>60.53</td>
</tr>
<tr>
<td>1980-81</td>
<td>67</td>
<td>13.48</td>
<td>430</td>
<td>86.52</td>
<td>497</td>
<td>-25.04</td>
</tr>
<tr>
<td>1981-82</td>
<td>375</td>
<td>24.02</td>
<td>1186</td>
<td>75.98</td>
<td>1561</td>
<td>214.08</td>
</tr>
</tbody>
</table>

Source: Primary Health Center, Tisgaon, November 1982.
Table 21
Number of Deliveries according to Place of Birth,

<table>
<thead>
<tr>
<th>Year</th>
<th>Institutional</th>
<th>As % of Total</th>
<th>Home</th>
<th>As % of Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>45</td>
<td>68.18</td>
<td>21</td>
<td>31.82</td>
<td>66</td>
</tr>
<tr>
<td>1971</td>
<td>56</td>
<td>78.87</td>
<td>15</td>
<td>21.13</td>
<td>71</td>
</tr>
<tr>
<td>1972</td>
<td>75</td>
<td>90.36</td>
<td>8</td>
<td>9.64</td>
<td>83</td>
</tr>
<tr>
<td>1973</td>
<td>42</td>
<td>89.36</td>
<td>5</td>
<td>10.64</td>
<td>47</td>
</tr>
<tr>
<td>1974</td>
<td>101</td>
<td>96.19</td>
<td>4</td>
<td>3.81</td>
<td>105</td>
</tr>
<tr>
<td>1975</td>
<td>101</td>
<td>42.44</td>
<td>137</td>
<td>57.56</td>
<td>238</td>
</tr>
<tr>
<td>1976</td>
<td>91</td>
<td>33.58</td>
<td>180</td>
<td>66.42</td>
<td>271</td>
</tr>
<tr>
<td>1977</td>
<td>82</td>
<td>34.31</td>
<td>157</td>
<td>65.69</td>
<td>239</td>
</tr>
<tr>
<td>1978</td>
<td>130</td>
<td>63.11</td>
<td>76</td>
<td>36.89</td>
<td>206</td>
</tr>
<tr>
<td>1979</td>
<td>85</td>
<td>34.69</td>
<td>160</td>
<td>65.39</td>
<td>245</td>
</tr>
<tr>
<td>1980</td>
<td>86</td>
<td>36.91</td>
<td>147</td>
<td>63.09</td>
<td>233</td>
</tr>
<tr>
<td>1981</td>
<td>95</td>
<td>38.15</td>
<td>154</td>
<td>61.85</td>
<td>249</td>
</tr>
</tbody>
</table>

Source: Primary health center, Tisgaon, November 1982.
Some impact is being noticed with the introduction of community health volunteers (health guides) who monitor pregnancy from its inception and assist at childbirth. As pregnancies are monitored right from the beginning, women are likely to be in better health with healthier babies being born. Besides, possible complications can be reported earlier to the doctors at the primary health center. Previously most deliveries were conducted at the primary health center or other health facilities. Now the stress is on conducting normal deliveries at home with the assistance of the health guide. Table 21 presents the number of deliveries in Pathardi taluka conducted at health facilities and at home between 1970-1981. Since 1979 a trend towards having deliveries at home is noticeable.

G: Conclusion

To summarise, the Ahmednagar district is somewhat unique in that it is chronically drought-hit leading to large scale seasonal migration of population within and to the outside. As there are a number of voluntary health care organizations working in this district the health facilities are fairly good. The Comprehensive Rural Health Project at Jamkhed, a pioneer in training village women as health workers, has probably led to the selection of the district for implementing the plan to recruit more women as health guides. Pathardi taluka, which we studied in greater detail, already has a number of women health guides trained at Jamkhed and they seem to be doing good work. We shall be looking at the government system again in chapter VII when we compare it with the voluntary organization.
Notes to Chapter V

1. A Block is an administrative unit for purposes of implementing community development projects generally with a population of 100,000 in about 100 villages and is headed by the Block Development Officer (BDO). The BDO is also the executive officer for the Block Panchayat comprising of all the presidents of the village panchayats in the block. A taluka is an administrative unit for purposes of tax collection and law and order headed by the tehsildar. While tehsildar is of colonial origin, BDO is a post-independence phenomenon.
Chapter VI

CASE STUDY OF A VOLUNTARY HEALTH CARE ORGANIZATION
AS A KNOWLEDGE UTILIZATION SYSTEM

In this chapter we shall present a case study of the Comprehensive Rural Health Project at Jamkhed as a knowledge utilization system. In this discussion we shall use the descriptive six-stage model of knowledge utilization as elaborated in chapter II and used in chapters IV and V. This will facilitate comparisons between the government health care system and the voluntary health care organization in the next chapter.

Before entering into a stage-by-stage discussion of the case, a few pertinent facts about the Jamkhed taluka where the Project was started and has been active would be useful. The project has also been extended to the adjacent taluka--Karjat--after 1977. We collected data only from villages falling within the Jamkhed taluka where the project has been active since 1970.

We have already mentioned in chapter III that both Pathardi and Jamkhed talukas are similar as far as geographic and environmental features are concerned. Both are drought-prone and hilly with the serious risk of famine at least once in ten years. There is high rate of migration from the taluka during sugarcane cutting season. It is not easy to explain the mere 9.5 percent population growth in 1981. Even in 1971 Jamkhed's growth rate of 18.9 was nearly nine percent below the district average of 27.8 percent (See Table 14 in chapter V). One of the reasons is seasonal migration. Another reason may be
the impact of the Project on reduction in infant mortality and birth rates. However, without accurate migration figures such a conclusion cannot be drawn.

We selected four villages in the Jamkhed taluka which have been receiving services from the project (Plate 3). We spent a day in each of these villages observing, talking to villagers and interviewing selected people. We went to two of the villages with the mobile health team of the project. In one the village health workers were carrying out an eye-check up for persons over 40 years of age. In the other the project staff was conducting a household survey to detect diseases such as leprosy and TB. We visited the other two on our own. The villages were selected with the help of the project staff based on the minimum criteria of distance, physical accessibility and size of the population (Table 22). There was a tendency for the staff to suggest that we select a particular village because it is "ideal." Ghodegaon, one of the villages we studied is one such "ideal" village. Sarola, on the other hand is not one of the original villages where the project provided services and it was selected by us because it is small but not too far away from the project headquarters at Jamkhed. Rajuri, is one of the first villages to join the project and its village health worker is known as an "ideal" case having been the subject of a BBC documentary on the project. Sakat is also important in that it provided the first woman to be trained by the project as a village health worker, a fact we learned after our visit to the village.
Plate 3: Map of Jamkhed Taluka Showing Villages Visited for the Study

1. Ghodegaon Village
2. Rajuri Village
3. Sarola Village
4. JAMKHEO CRHP Main Centre
5. Sakat Village

Table 22
Characteristics of Villages under CRHP, Jamkhed,
Selected for the Study

<table>
<thead>
<tr>
<th>Village</th>
<th>Population</th>
<th>Date of contract</th>
<th>GHF</th>
<th>PHC</th>
<th>NHF</th>
<th>Freq Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1961</td>
<td>1971</td>
<td>1981*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghodegaon</td>
<td>1,151</td>
<td>1,187</td>
<td>1,127</td>
<td>1970</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Jamkhed</td>
<td>8,890</td>
<td>12,374</td>
<td>13,318</td>
<td>1970</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Rajuri</td>
<td>1,486</td>
<td>1,803</td>
<td>1,748</td>
<td>1970</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Sakat</td>
<td>2,734</td>
<td>2,827</td>
<td>2,270</td>
<td>1970</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>Sarola</td>
<td>1,253</td>
<td>1,391</td>
<td>1,409</td>
<td>1977</td>
<td>3</td>
<td>18</td>
</tr>
</tbody>
</table>

GHF= Distance in kilometers to the nearest government health facility
HF= Distance in kilometers to the nearest non-government health facility
PHC= Distance in kilometers to primary health center
Freq Bus= Frequency of daily bus service to the village


Table 23
Types of People Interviewed at the Comprehensive Rural Health Project, Jamkhed

<table>
<thead>
<tr>
<th>Type of Person</th>
<th>Number</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community leaders</td>
<td>10</td>
<td>8</td>
<td>2*</td>
</tr>
<tr>
<td>Patients</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Village health workers</td>
<td>7</td>
<td>-</td>
<td>7*</td>
</tr>
<tr>
<td>Staff Nurse</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Social worker</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Leprosy technician</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Coordinator</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Project leaders / Doctors</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tehsildar</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Private Medical Practitioner</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Academics+</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

TOTAL 31 17 14

* One village sarpanch is a village health worker as well
+ Interviewed at New Delhi
Thus it might seem that the villages we selected for the study were all unique. Each of them was selected based on the criteria of distance from Jamkhed, population size of the village, and accessibility to health facility measured by the frequency of bus service to the village. However each of the villages which has been with the project has something unique about it. We also spent several days at Jamkhed at the headquarters of the project.

In all we interviewed thirty one persons connected with this project (Table 23). At New Delhi we talked to four academic social activists who were familiar with the project. At Jamkhed we interviewed the project directors, selected members of the staff and some village health workers. We also listened to two long talks by the project directors to a group of international visitors. Later these visitors had an open discussion with the village health workers and some villagers. During the previous week the project headquarters was the venue for the Maharashtra State Science Congress which was attended by over five hundred scientists from all over the state and over two hundred villagers from the project area. The response to an invitation to attend the Congress was so great that they had to limit the number of people per village to six. The project staff had put up an exhibition of the various aspects and methods of their work. Thus we were able to observe and document many aspects of the project which would normally be unavailable to individual researchers. To facilitate the exhibition many village health workers had volunteered their time. This enabled us to talk to many more than we would have been able to meet in the four villages we would visit. Thus we spent
many an evening talking to village health workers in groups and individually over tea.

A. Problem Identification

Having described the process of data collection we shall now discuss the Project in detail. In this section we shall focus on the general health status of the people in the Project area and how it is perceived by the project leaders and the people themselves. We shall explore people's attitude to health and illness based on our interviews. We shall also check how the project directors perceived the problem.

1. Illness as Curse of Gods

As in the Pathardi area, here too people believe that illness is a curse of gods. We asked our interviewees whether people still believed that illnesses are due to gods' curse. Some of the answers are summarised below.

1. People used to say that TB is god's curse, they would go to pilgrimages, to temples and offer fowl and goats to appease the gods. I tell them to do all the above if they want to, but I advise them to take medicine also to be cured. (J15: Smt. Jijabai D. D., 30, VHW).

2. Old people still go to temple and take treatment from medicine men and magicians. But we emphasize that they take our treatment also. Old women still believe in superstitions only. (J10: Smt. Yamunabai K., 42, Brahmin, VHW)

3. If the legs of a pregnant woman got swollen, we related it to god's wrath. (J11: Smt. Salubai B. S., 42, Harijan, VHW)

4. People would go to temple when they go sick to give offerings. These are expensive ceremonies. Still people used to die. (J16: Smt. Lalanbai, B. K., 45, Harijan, originally a VHW now assists in selecting prospective VHWs and CHVs).
5. There used to be cholera. People used to say it was god's curse. They would offer goats to gods. Cholera would only increase. (J25: Mr. Shahaji B. P., local leader and social worker).

6. Q: Did you feel leprosy was a curse of god?
A: Yes. But now I don't believe that since doctor has cured me. Now I am a member of the village panchayat, member of the mahila mandal and a woman homeguard. (J31: Smt. Subhadra P. G., 36, Harijan, rehabilitated leprosy patient).

Thus belief in illnesses being caused by gods is still prevalent according to health workers, community leaders and rehabilitated patients. Along with this, there is also evidence of much non-positive knowledge among the rural people leading to health problems or delay in seeking medical help.

2. Non-positive Traditional Knowledge

Our discussions corroborated the great prevalence of non-positive knowledge among rural people regarding illnesses and cures. Some of the examples we came across during our interviews are interesting and illuminating.

1. Q: What were the problems in the village before you became a village health worker?

A: People did not know about hospitals. If the legs of a pregnant woman got swollen, we related it to god's wrath. A mother did not breast feed her child up to three days after birth. Umbilical cord was cut with any sharp object. Eating fruits was forbidden to women and to new mothers up to three months after delivery. She was also restricted from eating much food. The village was not in very hygienic condition. There was dirty water puddles in the streets and children excreted in the open including the streets right next to their homes. Therefore there used to be epidemics. Previously when a snake bit a person, he was kept in a temple. If a man was bitten his wife's shadow was not allowed to fall on him and vice versa. That person was never taken across a river. If it was done, it was believed that the person would die. (J11: Smt. Salubai B. S., 42, Harijan, VHW)
2. Q: What were some of the health problems in the village?

A: Women would not give breast milk for the first three days after childbirth. So I had to teach them that mothers' milk has vitamin A which is necessary to remove gas from babies' stomach. People never used to give water to babies for the first eighteen months. Only milk would be given. After six months mothers produce less milk, but people would not give additional food to children. Initially pregnant women refused to take vitamin pills thinking it was for abortion. Children used to defecate in the open and flies from this shit would go and sit on the roti [flat bread]. So I tell women to throw mud on shit and cover it, as well as cover roti in clean cloth. (J15: Smt. Jijabai D. D., 30, VHW).

3. Q: What were the problems in the village before you became a health worker?

A: There is the practice of using the tongue to remove something that has gone into the eyes. But this is dangerous because many germs are there on the tongue. Also our tongue is not very smooth. So we should wash our eyes in clean water and use ointment for it or better go to the doctor. (J10: Smt. Jamunabai K., 42, Brahmin, VHW)

4. Q: What were the problems in the village before you became a health worker?

A: Dai (traditional midwife) used to deliver children in dirt. They would cut the umbilical cord with dirty and unsterilized knife. So children used to die of tetanus. Leprosy patients used to be hated and isolated. After people were diagnosed as having TB or leprosy even spouses used to desert them. Pregnant women were told not to eat papaya, mango, nuts etc. They thought that it would induce abortion. People with smallpox were not given food for nine days and not given bath [smallpox has now been eradicated] (J16: Smt. Lalbanbai B. K., 45, Harijan, VHW now assists the project leaders in selecting prospective VHWs and Health Guides)

5. Q: What were the problems in the village before you became a health worker?

A: People with chickenpox were isolated. People would say that "gourai" [a local goddess representing illnesses] took away when someone died. (J17: Smt. Gangubai B. K., 40, Harijan, VHW)
6. Q: What were the problems in the village before the project started working in this village?

A: People used to drink water from the river or from the ponds where they washed their animals and clothes, and also bathed. Leprosy used to be treated as a curse of god. Kamble [a rehabilitated leprosy patient] used to be treated like a dog. Doctor treated and cured him. Now people know that it can be cured.

Formerly, if anyone was bitten by a snake, he was left in the temple to die. If he died people would say that a woman wearing black went that way, so he died. If he did not die, it also was attributed to gods. Now Yamunabai [VHW] knows what to do if a snake bites someone, like open the wound, tie a knot above the wound closer to the heart and so on and then take to hospital. Two months ago, a man was bitten by a snake and was saved by the immediate attention of Yamunabai.

There was a custom of handing a glass of water to a woman in labor. If she died in childbirth, the person who finally handed it to her was blamed. If the mother and baby were safe, god was given the credit. (J25: Mr. Shahaji B. P.; 38, Brahmin, village leader and social worker; BA, LLB by training; owns 300 acres of land)

7. Q: Did people worship god if someone was ill?

A: Yes. Ash from the temple fire was applied to body. Sacrifice of a goat or rooster is common even now. (J21: Mr. Tribbak S. V., 50, Sarpanch)

Non-positive knowledge (avoidance behavior) such as not giving fruits and certain foods to pregnant women, not breast feeding newborns for the first three days, not giving water to children for the first eighteen months, isolating leprosy patients, leaving snake bite victims to die etc. are a few examples of non-positive knowledge that has been prevalent in this area.

B. Problem Definition

The general problems related to health as expressed above are rampant in most rural areas of India. Therefore successful knowledge
utilization would require definition of these problems in more accurate terms. The founders of this project had done this while they were undergoing advanced training in public health in the United States of America in the late 1960s, based on the experiences they had gained while working in rural hospitals in India.

Upon graduating together from the medical school the husband-wife team of Drs. Raj and Mabelle Arole went to work in a rural hospital in Maharashtra as they wanted to serve the rural poor. In the next two years they treated patients who came to the hospital. They soon realized that the poor who they wanted to serve were not coming to the hospital and that by treating illnesses reported at the hospital they were barely solving the problem of rural health. The majority of the rural poor who need health care do not come to the hospital because they cannot afford to come to the hospital. The Aroles decided to study the problem of public health with advanced training in the United States on a Fulbright scholarship. While studying at the Johns Hopkins University, they prepared detailed plans to reach health care to the rural poor.

1. Helping the Rural Poor

They also analysed the socio-economic conditions that lead to illness and poor health of the rural people. They also developed a strong sense of commitment to work for the poor stemming from their Christian ideals. Thus according to Dr. Raj Arole:

Most people know that 50% of the people live below poverty, in abject poverty. But what does it mean? It means that when a poor woman in the village soils her sari, she has no other cloth to cover her shame. It means that when a child is sick, the parents do not have money to take the child to the
hospital. It means that when the villager has a bit of land, he does not have enough money to go and buy the seeds or fertilisers because the money lender takes all the grain.

When we talk of development, it should be in the context of the poor, especially those residing in the rural areas, not of all those who live in the rural areas because all those who live in the rural areas are not poor. So when we talk about change agents in the development process for the poor, I think we have to go back to our motivation to serve the poor. Our motivation to serve the rural poor is the gospel. Jesus lived in such poverty, that the gospel writers say that the son of man had nowhere to go. Now it was that kind of an identification with the poor he did not stop at being poor or being identified with the poor. He did one more thing. He used the very poor for their spiritual development. He could take the rich people, he could take the politicians, he could take the learned people from the Sanhedrin to be his disciples. But he did not choose that path. He placed immense confidence in the simple creation of his. They are simple to you and me. But to the Son of God they are the most precious. That is why he set aside those precious people.

Therefore when we want to work for the poor let us make sure that their destitution, their ugliness, their stinking bodies which make us look down upon them, are not in tune with Jesus. He made use of his creation, the greatest creation, to bring the eternal truth, the truth of eternal life, he entrusted to this most simple people. And therefore when we talk about making these simple village people change agents, please do not think whether we are right, whether it is possible. But remember it is the easiest, because God himself does that. (Jl: Dr. Raj Arole, Director, Project)

Even though the above talk was given to a group of international Christian voluntary agency representatives, the project leaders have in other contexts also openly professed Christian principles as guiding their work. This is expressed in their defining the problem based on biblical terms. What is important is that there is an open attempt to serve the needs of the poor who are the most vulnerable with regard to health care and not the rich.
2. Subjugation of Women

Another crucial problem of health care of the rural poor is the social and legal condition of women in India. Differential health rates of females are an indication of the low status and exploitation of women in a male-dominated society. Dr. (Mrs.) Mabelle Arole very well articulated these issues in her talk to a group of international visitors:

Let me trace this exploitation right from a woman's birth through her death. The exploitation begins right at the time of birth. Just now in the hospital here, I finished a caesarian section on a woman, who had delivered for the eleventh time. She had no living children so far. And this was the first time she had got a living baby. But when she woke up and found that it was a girl, she hit the child and refused to feed it and said, 'What use have I for this child? It is a girl. She is no good. One day she will go away from me. I do not want her.' And those who have worked in the labor rooms of the many hospitals in India have had this experience over and over again that when a girl is born, the mother is absolutely depressed. She may not feed the baby for days together and sometimes gets discouraged. So the child, the girl, becomes unwanted, uncared for and unloved from the very birth....

As a child, even when she is four-five-six years old, she begins to realize that she is different from her brother. The brother is given all the care, the love and affection by the parents. The mother finds the choicest of foods for her brother, a few scraps are given to her. So even at that early age she realises that she is a second class citizen. Then as she grows older maybe she is allowed to go to school the first year. But definitely by the second year 80-90 percent of the girls have to stay at home to look after her younger brothers and sisters. There is no childhood for them. They have to learn to cook, do all the household chores while the parents are out working, whereas the brothers have a good time, he goes to school, he does what he wants and above all he gets whatever he wants.

Then as she grows older, there is no teenage. They must get her married off before she gets pregnant. The marriage itself is a problem for the parents. They have to 'buy' a groom in the market and that again is one of the reasons why the parents do not want a girl because they have to spend a lot of
money to find a husband for her. She gets married and goes to his home, not as a wife, but as a slave, with no freedom. She is completely in the hands of the mother-in-law and her husband. She has to do all the hardwork and as she gets pregnant and there is need for better nutrition, what happens? She has no right to eat. She can eat only a few scraps the mother-in-law gives her, after the husband has eaten. If the husband does not come home, she is not allowed to eat because she must eat only after her husband eats. And she has no time of her own. If she spends more time with her children, she is told, 'Why are you wasting your time.' She is a complete slave.

There are more injustices. If she falls sick, she has to go back to her parents and if the parents are well-to-do they will look after her. Otherwise she will just die. (J3: Dr. Mabelle Arole, Joint Director, Project, at Seminar on 'Women in Development')

Thus rural women have very little control over their own or their children's health. Therefore education and emancipation of women is necessary to improve their health status. It is crucial because the health of the whole family depends largely on the mother.

3. Subjugation of Harijans

The harijans, who are officially known as scheduled castes, are the former untouchables. Constitutionally untouchability has been banned. Despite changes in the law, the former untouchables still are poor, illiterate and subjugated. They still do not have easy access to all public facilities such as primary health centers and village wells. The upper castes still treat them as untouchables and they are given menial jobs which were always traditionally assigned to them. Even after being trained as a village health worker, a harijan woman was still treated as an untouchable:

Q: What difficulties did you face when you started your work as a village health worker?
A: I belong to the scheduled caste, i.e., harijan. So I was not allowed to go for delivery into anyone's house. Delivery had to be conducted in the backroom of the house. All the things in the house were kept aside and I was given a way to go. As being an untouchable the people did not like me touching the women at the time of the delivery. I was given tea in an aluminium dish which was supposed to be thrown away. But I never drank that tea. The Project has had a food program to give good nutrition to the children. Being a harijan, again, I used to feel awkward to distribute the food to the children gathered at the school. People resented taking liquid medicine from me in the beginning being afraid of getting polluted by me. (Jll: Smt. Salubai B. S., 42, Harijan, VHW)

Thus while defining the problem of rural health these fundamental socio-economic factors have to be understood and taken into account. The project directors have been explicit on this from the beginning. Since they themselves were making policy decisions regarding their work, such a definition of the problem clearly focused the project on its goals and objectives. As medical specialists trained abroad the Aroles could have set up a modern hospital to attract the rich and have earned huge profits. Instead they decided to set up a hospital with all modern facilities to provide affordable health care for the rural poor.

C. Problem Specification

Before leaving the United States for India in 1970 having completed their training and internships in public health, the Aroles had written to a number of people in different parts of Maharashtra state expressing their interest to work in rural areas. They wanted to work only in an area where the local people would help and support their plans. They wanted the participation of the people right from
the beginning. According to the founders, the reasons why they chose Jamkhed to start the project were the following:

Many invitations were initially received from the leaders of villages in Ahmednagar and neighbouring districts, but the final decision to start the health work at Jamkhed rested upon the fact that the Jamkhed leadership and the community as a whole admitted a definite need for health care and were willing to understand, co-operate and actively participate in project activities. Jamkhed was also selected as the site of the main project centre because it serves as the central marketing and administrative village of the entire taluka; and therefore, is its natural focal point.

The villagers co-operated magnificently with the project authorities by providing accommodation for the staff. An old veterinary dispensary was converted into a health centre. A special Advisory Committee was set up in Jamkhed as soon as the work began. This committee had representation from all segments of the population: women, Harijans, political parties, regional areas, minorities etc. (Arole and Arole, 1982: 3)

As a result of discussions with the village leaders and the Advisory Committee a suitable line of action was decided and appropriate steps suggested. Thus they arrived at the following priorities for health care and integrated rural development.

1. Health Care Priorities

   a) Simple symptomatic primary care available in the individual village at all times.

   b) Care of pregnant and lactating mother and deliveries.

   c) Care of preschool children: (i) Nutrition, (ii) Immunization, (iii) Treatment of simple illnesses

   d) Family planning and health education, availability of all supplies at local levels, and sterilization facilities at the base hospital.

   e) Control of chronic illnesses such as leprosy and tuberculosis: (i) Identification of cases, (ii) Regular treatment, (iii) Rehabilitation at village level.
f) Prevention of blindness: (i) Nutrition, (ii) Infections and eye injuries (iii) Surgery for cataracts, glaucoma, etc.

g) Facilities for follow-up and emergencies (Arole and Arole, 1982: 3-5).

2. Integrated Rural Development Priorities

   a) Seasonal under-employment: income generating enterprises such as small-scale industries, clothes, poultry, goats, sisal fibre.

   b) Animal health care: (a) Relevant and cheap primary veterinary health care for farm animals at village level, (b) Up-grade poultry and dairy animals, (c) New types of fodder for dairy cattle.

   c) Alternative energy: Wind, solar and bio-gas resources to be identified, developed and exploited— independence from scarce fossil fuels.

   d) Non-formal education: (a) Mother and child appropriate training programmes, (b) Catering to needs of school drop-outs and of those who do not attend school. (Arole and Arole, 1982: 3-5).

Shortly after the project was started in the bazaar area of Jamkhed village, a local farmer, impressed by the work, donated seven acres of land one kilometre south of Jamkhed. The advisory committee helped the project directors in the design of a permanent centre and provided supervision for the building construction. Skilled local contractors donated free services and local people donated much of the building material. The capital expenses were initially met by various national and international humanitarian organizations. The expenses worked out to about Rs. 15 per capita (for the target population of 30,000 in 1970) and included the following:

   (i) Buildings:- A 30-bed hospital with operating room, laboratory and X-ray room; training facilities, guest rooms and storage rooms at the main centre; and supplementary subcentres.
(ii) Staff Quarters:— for 30 staff members such as doctors, nurses and para-medical workers.

(iii) Equipment:— X-ray unit, laboratory, emergency surgery, obstetric services, routine outpatient services, stand-by generator, and audio-visual aids.

(iv) Vehicles for transportation of people, goods and mobile health teams (Arole and Arole, 1982: 21-22).

D. Program Formulation

Having identified the health care and integrated rural development priorities which were the twin objectives, the project directors devised a three-tier system to meet the former and encouraged setting up of farmers' (men's) clubs, women's clubs and nonformal education classes to meet the latter.

In the beginning they thought of training an auxiliary-nurse-midwife and placing her in the village to meet the first priority of providing simple symptomatic primary care as well as for maternal and child care and family planning services in the individual village at all times. This is what happened to that idea:

Now why did I go directly to the villagers to find the right kind of focus for us? To find out the problems, I am going to talk to the people. I am going to take some time to sit in the teashop and wait for the people. We ourselves were myopic, we had blinders on, and could not think that anybody but a technical person could deal with these problems. So we thought of doctors; but doctors were costly. Maybe we could develop a nurse and place her in the village. Soon we found that these nurses were having a hundred and one excuses not to stay in the villages and give simple medicines, and change tablets and capsules. So we found young men of their ages and did matchmaking and got them married thinking that they would then stay. Now they say: 'Oh, I am vomiting in the morning, how can I stay?' So disgusting, these excuses.
In the meantime we were analysing. Now these very girls who were from the villages but because they were taken away from the villages and were sent to the city for formal training, they have got certain wrong values, certain wrong ideas about themselves. So when they come back, they want to show the villagers how different they are rather than identifying with the villagers. They wear different kind of saris, they put their foot differently, they talk differently. And therefore these people were not going to be effective. So we thought we ourselves will do the work. (J1: Dr. Raj Arole, Director, Project - Discussion)

1. The Village Health Worker

The idea of training a local woman as a village health worker came up almost accidentally at this time. This is how it happened:

The first village we went to was a tribal village. We did vasectomies. We gave some education. Again we were untrusting, we had no faith in them. They asked us to teach one of their women something about health. So we took it as a challenge and trained her here at the hospital. But when she went back she was so good that in two months she had organized the whole village, motivated seventy five women for tubectomy. She had brought all the women together to learn about health care in evening classes. The village people came and asked that we teach her to conduct classes. We realized that we had something here. So we started recruiting women for this work. (J1: Dr. R. A., Director, Project - Discussion)

This was the beginning of the unique success of the project mainly by recruiting and training local women as health workers. Each of the original seven women selected and trained as health workers have done excellent work in their villages and have become role models for health workers all over the state.

2. The Mobile Health Team

The mobile team is the second tier in the health delivery system. The team consists of a nurse or an auxiliary-nurse-midwife, a paramedical worker and sometimes a social worker or a doctor. The
team resides at the centre or one of the subcentres and visits each village in its assigned area either weekly or bi-weekly. The role of the health team is to support the village health worker in her activities, provide an effective consultative and curative service and refer those patients who cannot be treated in the village to the center or to one of the sub-centers. Weekly classes are conducted for the entire staff so that the approach to health education remains identical. This ensures that the professional staff and all the others convey the same message (Arole and Arole, 1982: 10-11).

3. The Health Center

The third tier in the health delivery system is the center and the four-subcenters. These meet the common medical and surgical emergencies and receive the cases referred to them by the village health workers or the mobile teams. Those few patients needing more sophisticated and extensive diagnostic services and treatment are referred to the larger medical centers in major cities.

The main center is also the focal point for members of the Farmers' Clubs. Every three months seminars are arranged where members can learn more about new farming techniques and debate their relevance. The center also cooperates with the government on all aspects of health and rural development such as family planning, leprosy control, bio-gas installations, improved housing, and safe drinking water. Womens' clubs and non-formal education programs organized in the villages with the help of the project are also important aspects of rural development. The project also trains teams
of selected persons in formal and non-formal health for other organizations.

4. Organization Structure

Figure 10 represents the organization structure of the project as it has evolved in the last decade. All the personnel are trained in all aspects of primary health care so that they can easily do all the various tasks, though each one has a primary area of expertise and responsibility. Another allopath and two homeopaths also work at the hospital. There are two more staff nurses and ten auxiliary nurse midwives who are members of the mobile health team as well as provide nursing service at the hospital. The centre also has X-ray technicians, and lab technicians needed for diagnostic services as well as secretaries, typists, drivers etc. necessary for running an organization of this nature.

E. Program Implementation

The programs to be implemented are formulated by the project directors with the help of the advisory committee. Very quickly many of the villages surrounding Jamkhed sought to become involved and to establish their own health programs. The project undertook such programs only when there was a firm invitation from the entire village community. Each community was expected to provide the following:

a) The infrastructure for local health work;

b) A local woman to become the village health worker (VHW); and

c) Volunteers as required to help the VHW and project teams in such activities as health surveys, mass immunizations, family planning, sanitation etc. (Arole and Arole, 1982: 7).
### Figure 10
Organization Structure of the Comprehensive Rural Health Project, Jamkhed

#### Director
- ** Founder, general surgeon trained in public health  

#### Joint Director
- ** Co-founder; gynaecologist trained in public health  

#### Supervisor
In charge of public health activities like health surveys, training of village health workers, mobile health team etc.

<table>
<thead>
<tr>
<th>Leprosy technicians</th>
<th>Nurse-instructor</th>
<th>Social workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>leprosy detection and treatment; health surveys and mobile health team</td>
<td>in charge of training village health workers mobile health team; hospital service</td>
<td>health surveys and development activities; Farmer's clubs</td>
</tr>
</tbody>
</table>

#### Village health worker
One health worker, always a female, for a village or population of 1,000; she is invariably of the same village selected with the knowledge and consent of the villagers.
1. Village Health Worker as a Change Agent

As we have mentioned above, the idea of training local women as village health workers (VHW) was born by chance. Soon this feature became one of the most important aspects of the project. Selecting the right person to become the village health worker was also difficult. As the project wanted to serve the women, the poor, the landless, and the harijans who are generally most in need of health care, these groups should be the source of persons selected as VHWs. While making the selections the Project had to take into consideration the village social structure, the caste system, and the capability and dedication of the woman to health work. According to the project director the rationale of selection is as follows:

The selection process is very simple. We call a village meeting. We select a woman with the help of the village. But make sure you have a village meeting. Now, we have no vested interests. We do not have power groups. But those of you from India will know what happens when you want to call a meeting. The sarpanch, the police patil, and the government official, that is all who will come.

'Where is the harijan fellow?'
'Oh, don't worry, sa'ab, whatever we tell, they will listen to.'
'Where is this mahar [a harijan caste], where is this other guy?'
'Oh, don't worry.'

If we suggest to sink a tubewell, the local power group will say:
'Alright sa'ab, let us sink it here next to the mayor's [sarpanch's] house, or in front of his office.'

If we ask:
'What about the harijans, will they be allowed to draw water from the wells?'
'Sure, sa'ab, they can draw water.'
But as I leave the village the harijan group will be standing under the tree:
'Saab, if you dig the well near the mayor's house, we shall not get water.'

So when we are selecting a change agent, we have to make sure that the person will be from the disadvantaged group or someone who has sympathy for those people. So who we select for this role is very important. There is no point in selecting the local teacher's wife or some outside man's relative, nor somebody unmarried and young. We train and she gets married and goes away. This person should not be a destitute that she just wants the opportunity to be associated with you and she ensures some kind of economic benefit. Nor the person should be very well-off. It should be someone who is not too poor but is fairly economically independent. It should be someone who is perceptive, who has gone through all the struggles that we are talking about, who is a mother, who has children, who has had a tubectomy, who has gone through the child being a drop-out from school, someone who has tasted life. Most of our workers are such (Raj Arole, Discussion).

It was not easy to find a woman meeting all the above requirements who would be willing to undergo the training and be the health worker in her village. By their own admission, these women were often reluctant and afraid in the beginning to become health workers as the two following cases illustrate:

1. Q: How were you selected as a village health worker?
   A: A neighbor took me to Arole's mobile hospital. They asked me whether I would work as a village health worker. I said no. They said I would get thirty rupees honorarium per month and ten rupees per person I would persuade to do family planning operation. Finally I agreed reluctantly. People told Dr. Arole that since I had land, I would work. (J13: Smt. Shantabai S. H., 45, VHW)

2. Q: How were you selected as a village health worker?
   A: Project's jeep used to come to the village. I used to work on the DPAP (Drought Prone Areas Program) project carrying mud for constructing roads and bunds. When I came home for lunch I was called. I felt, why should I go? I would be late for work. But I stood far. Doctor talked to me. I couldn't speak. I was afraid. Doctor asked my name. I couldn't move my feet. I took my father with me to go and talk.
'Will you work?'
'What work?'
'Come to hospital. We will tell. It is to give pills to people.'
'How can I, illiterate, give medicine?'
'You study, if you can,' my father said.

I said yes thinking they would go away. They asked me to take Salubai [VHW from a nearby village] and go to Project. That night I could not sleep. I was scared that I would not be able to do it. I walked to Salubai's village and asked Salubai. She encouraged me. So I finally came here. I did not even know how to sit [squatting in padmasana posture]. My neighbor in class used to scold me to sit properly. Sarpanch also asked me to work for the Project. (J16: Smt. Lalanbai K., 45, Harijan, VHW now a trainer for VHWs and CHVs)

Women were selected and trained together irrespective of caste, religion, and literacy level. The socially integrated training group itself was a great experience for each of them. The project directors were keen on breaking down caste and religious barriers during training. So these women cooked together, ate together and lived together. This quickly broke down caste and class barriers.

Initially the selected women are brought to the center for a one-week training. Thereafter they come to the center twice a week. Most of the teaching is based on actual cases encountered at the center or in the village during the week. The training is generally geared to dealing with the priorities set by the project. Although the emphasis is on promotion of health care and prevention of diseases, they also receive some training in curative treatment of simple illnesses and the use of a few basic drugs.

In the village, the health worker is expected to give primary care to each and every person in the village irrespective of caste and financial ability. The VHW, who is often illiterate herself, receives
strong support from literate members of the farmers' clubs or women's clubs in such tasks as weighing children, record keeping, health education and nutrition programs. However most of her time is spent in preventive health care including health education, immunization, and environmental sanitation.

Treatment of minor ailments at an early stage is one of the responsibilities of the VHW and on an average she treats 15 to 20 patients daily. At the time of the daily nutritional program, she makes a general check on the health of the children. Later she visits those sick at home. She systematically covers the whole village once a week. In the course of these visits she sees all the pregnant women and encourages them to take antenatal care. About 80 to 90 percent of the pregnant women accept the VHW's advice and receive regular care. The VHW will also be on hand to conduct deliveries and later visit the mother and the baby during the postnatal period. (Arole and Arole, 1982: 8-9).

2. Mobile Health Delivery

The nurse is the organizer and co-ordinator of the mobile health delivery team. She, with the local VHW, is especially responsible for the health of the mothers in the village. She conducts an antenatal clinic and examines each pregnant woman at least three times during the pregnancy. All pregnant women are also immunized with tetanus toxoid. The nurse advises the VHW whether the delivery can be undertaken safely at home or whether the expectant mother should be taken to a hospital. Later the nurse accompanies the VHW on home visits to examine all post-natal patients and to ascertain whether the
VHW has conducted a safe delivery. The nurse also conducts a curative clinic. All the patients with illnesses too complicated for the VHW to handle are brought to her for examination, diagnosis and treatment. She immunizes children according to a schedule prepared by the VHW. She also examines and screens all blind persons.

The para-medical workers follow-up on the leprosy and tuberculosis patients making sure that they receive regular treatment. The VHW would report on any patient who has become negligent in taking treatment. Leprosy patients are screened for deformities and shoes are provided for those having anaesthetic feet. Skin smears are collected from patients suspected of having leprosy and sputum samples from those suspected of having tuberculosis. In some cases patients suspected of having tuberculosis are referred to the main center for an X-ray. All contacts, especially family members, are treated and checked periodically for signs of the diseases (Arole and Arole, 1982: 10-13).

F. Program Adoption

Since its inception in 1970 the villages that have joined the project have shown remarkable improvement in their health status. The project directors had done benchmark surveys to determine the socio-economic status of each family before starting work in a village. This has helped them to provide medical services free or at a nominal cost to the poor. They follow a sliding scale in charging for their services and medicine. The recurring expenses of the project are met from the fees collected at the hospital. Curative
care is a felt-need of the people and they are willing to pay for such services. Income from the curative services is also utilized to support comprehensive care in the villages supporting the village health worker, the mobile team and nutrition program. Since 1977, government provides the honorarium for the village health workers. Many medicines are available free from the government. Programs for leprosy control and rehabilitation and the prevention of blindness are subsidized by voluntary donor agencies. In addition to the health programs, voluntary agencies interested in community development have helped to initiate programs such as goat-cooperatives, agricultural credits, poultry, and food-for-work projects. All these are helpful in raising the economic standard of the people. Many poor people in this drought prone area depend on these programs for subsistence.

1. General Impact of the Project

Tables 24 to 26 present some information on the project to show its impact on health and rural development. Rate of reduction in infant and child mortality in the project area is substantial (Table 24). This is also confirmed by villagers who boasted that they have not had a single infant death after the project began work in their village.
Table 24

Vital Statistics of the Comprehensive Rural Health Project, Jamkhed

<table>
<thead>
<tr>
<th></th>
<th>Project Villages</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1971</td>
<td>1982</td>
</tr>
<tr>
<td>1. Population</td>
<td>---</td>
<td>100,000</td>
</tr>
<tr>
<td>2. Birth Rate</td>
<td>40/1000</td>
<td>23/1000</td>
</tr>
<tr>
<td>3. Crude death rate</td>
<td>---</td>
<td>9/1000</td>
</tr>
<tr>
<td>4. Infant mortality</td>
<td>180/1000</td>
<td>41/1000</td>
</tr>
<tr>
<td>5. 0-5 mortality as percentage of total deaths</td>
<td>---</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Project Villages</th>
<th>Control villages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1971</td>
<td>1982</td>
</tr>
<tr>
<td>1. Under Fives Clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Immunization:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small pox, triple antigen and poliomyelitis</td>
<td>1%</td>
<td>98%</td>
</tr>
<tr>
<td>b) Malnutrition</td>
<td>30%</td>
<td>6%</td>
</tr>
<tr>
<td>2. Control of Chronic Illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Tuberculosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New case detection</td>
<td>365</td>
<td>401</td>
</tr>
<tr>
<td>On regular treatment</td>
<td>--</td>
<td>1335</td>
</tr>
<tr>
<td>Case holding rate</td>
<td>--</td>
<td>91%</td>
</tr>
<tr>
<td>b) Leprosy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New case detection</td>
<td>277</td>
<td>266</td>
</tr>
<tr>
<td>On regular treatment</td>
<td>--</td>
<td>1211</td>
</tr>
<tr>
<td>Case holding rate</td>
<td>--</td>
<td>95%</td>
</tr>
<tr>
<td>3. Prevention of Blindness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) On regular six monthly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vit. A. (children)</td>
<td>--</td>
<td>7000</td>
</tr>
<tr>
<td>b) On regular Vit. A. for pregnant women</td>
<td>--</td>
<td>2480</td>
</tr>
<tr>
<td>c) Cataract operations since 1974</td>
<td>--</td>
<td>2172</td>
</tr>
<tr>
<td>d) Villages surveyed for eye disease</td>
<td>--</td>
<td>2</td>
</tr>
<tr>
<td>e) Vit. A. deficiency</td>
<td>--</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 25 presents a comparative picture of services rendered by the project and some control villages. In immunization of children for example, the project has been highly successful. This should partially explain the much lower mortality among the 0-5 year olds in the project villages. Malnutrition among children has been reduced from thirty to six percent while it has remained five times higher in control villages.

As we have described earlier, there was much non-positive knowledge about pregnancy and child care in rural India. The village health worker has been instrumental in educating women on proper child care and simple remedies such as oral rehydration therapy (ORT) which has saved many an infant from death. Supplementary nutrition programs have been organized for the children in the villages. This has not only improved child health but also increased school attendance and literacy.

Table 26
Family Welfare Planning Services Rendered by the Comprehensive Rural Health Project, Jamkhed

<table>
<thead>
<tr>
<th></th>
<th>Project Villages</th>
<th>Control Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1971 1982</td>
<td></td>
</tr>
<tr>
<td>1. Antenatal Care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of ANC cases</td>
<td>364 2480</td>
<td>--</td>
</tr>
<tr>
<td>Taking regular ANC</td>
<td>0.5% 98%</td>
<td>2%</td>
</tr>
<tr>
<td>2. Deliveries conducted by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>trained staff,(VHW/hospital)</td>
<td>1% 64%</td>
<td>10%</td>
</tr>
<tr>
<td>Deliveries conducted at home</td>
<td>-- 95%</td>
<td>--</td>
</tr>
</tbody>
</table>

As against a mere 0.5 percent in 1971, 98 percent of women in the project villages took ante-natal care by 1982 (Table 26). In a nearby non-project area only two percent of the pregnant women were taking such care. Similarly from a low one percent in 1971 now 64 percent of the deliveries are conducted with trained assistance, of which 95 percent are conducted at home.

2. Success of Village Health Workers

While the general impact of the project is considered very positive judging from the aggregate information presented above, the achievement did not come easy. As can be learnt from the experiences narrated in the following cases, the village health workers did not succeed overnight.

1. Q: What were some of the problems you faced as a village health worker?

A: I myself was afraid to go for training. After training there were difficulties while starting my work. I was afraid that people might scold me when I went to inquire about them. Things became alright when it became a practice. Previously I was afraid of handling a delivery. I feared whether the child would live or die.

Q: Did people listen to you when you started out as a VHW?

A: No. They did not listen. The young farmers' club helped in this. People started having faith in me when I myself started doing deliveries and gave them medicines which proved profitable to them.

Q: What obstacles did you have while working as a VHW?

A: As I am a brahmin, I was not going to the harijan wada (section) because other people were against this. People felt that I was polluting myself while helping harijans in deliveries and other diseases. So I used to guide harijans in deliveries and other matters without touching them. I was not feeling like touching harijans because of social bondage and force of habit. So I was not even taking tea or water from them. I was throwing medicines at them from a distance.
Young farmers' club was eager to do work among all. So they supported me in my work. So now I am doing everything with my hands and there is no problem for me. We now gather together and eat together. During training I used to forget everything after lecture. But now I am able to keep everything in my mind. (J10: Smt. Yamuanbai K., VHW, 42, Brahmin)

2. Q: What were the difficulties you faced as a village health worker?

A: People were not responding to us. They were not doing according to our instructions. Even then we were giving instructions from time to time to people regarding health. In the earlier days people used to say that we were taking the people for operation [vasectomy or tubectomy] for getting the ten rupee reward [which a sponsor or motivator is entitled to from the government]. The people were prejudiced against family planning program. Actually we had to spend more than ten rupees because we had to stay with them for two days and had to take much trouble. Still we have worked and this has contributed to the progress of the village.

People were told that if a pregnant woman vomited, did not feel hungry or had dysentery she was likely to be anaemic. This could lead to lack of blood supply to the child in the womb. Such women were advised to seek medical help. But some would tell us that we were telling lies. But now they all listen to us. (J12: Smt. Janabai D. S., 30, the first VHW, now a CHV)

3. Q: What were some of the health problems in the village?

A: Some pregnant women don't tell us in the beginning due to shyness. Some neighbors say that so and so is vomiting etc. or they had menses together and now she hasn't had etc. If I find that a woman is pregnant and has morning sickness I advise her to take pills (NCPAR) after eating roti [coarse flat bread]. And in the seventh month they should give anti-polio vaccine to children. Give water to children. Third month they should give triple antigen.

Q: What problems did you have as a village health worker?

A: I being from the backward class [harijan], Patil (a government official in charge of village security) used to ask me to keep my chappals [sandals] on my head [a sign of complete subservience]. I used to do it out of fear. Sarpanch asked me to give him twenty rupees out of the thirty rupees honorarium I received monthly. I gave him twenty rupees once. He asked again. Then I told Dr. Arole. Doctor sent Mr. Thorat [supervisor of Project] to fetch sarpanch from
the market. Then doctor met him and explained to him and asked him not to do it again. Now he does not ask for money.

A woman's mother-in-law was telling me that God gives children and abused me and came after me with a broom. So I went to where she washed clothes and talked to her again and again and convinced her. Her husband also agreed. I told them how if they had four children, their land would be divided into four parcels. Maratha women do not listen to me. Patil's wife used to tell in mahila mandal meetings that Dr. Arole tells anything and everything and that I also tell anything without knowing, and why listen to me. I asked the women, 'Does Patil's wife give you food? We are trying to help.' [Project gives food for the ba1wadi]. Now nobody listens to Patil's wife. (J13: Smt. Shantabai S. H., 45, Harijan, VHW)

4. Q: What were some of the problems in your work?

A: Some people would not talk to me. I could not enter some houses. I used to call everybody a 'bai' [sister]. Some never used to tell me when they had gynaecological problems. Doctor asked me to survey it. Once a Muslim gentleman said to me: 'I have no pain but my .... is aching.' I told him that I would have beaten him up if I was not his sister, and that since I want to serve the village, I would not report him. He realized his mistake later and apologized.

I did a family planning survey of the village. One woman had her tenth delivery. I asked a neighbor what the name of the father was. Hearing this, he told me that even if he had a hundred daughters he would not stop reproducing and that he would never undergo operation. He tried to snatch away my notebook in which fifteen days survey was recorded. So I did not give it to him. Even when his mother said that his name was not there he would not agree.

People used to ask me what has come of me because I used to sweep and clean the village, what could I do. For two years they would not listen. Now they call me, 'doctorbai,' 'Lalanbai,' 'Lalanbai, bar hai ka? [Lalan sister, are you fine?] (J16: Smt. Lalambaik., 45, Harijan, VHW now a trainer of VHWs and CHVs)

Thus the experiences of these women are rich with examples of initial resistance to change by the villagers and their gradual acceptance as change agents. In all the villages we visited the village health workers were respected and recognized by men, women and
children. Community leaders and other villagers spoke very highly of their commitment to and impact on the health of all the people in the village.

3. Women's Clubs

One of the reasons for the success of the health worker and the whole project itself is the organization of women's clubs in each village. The project directors had recognized from the beginning that unless women were organized on their own they would not be able to benefit fully from any programs designed for them. In rural India, as elsewhere, women have the primary responsibility for the well being of the whole family. In the project area the Women's Clubs are more active as prime movers than the Farmer's Clubs on such things as nutrition, safe drinking water, health and hygiene, and kitchen gardens.

The Women's Clubs have been effective in increasing the functional literacy of women in the project villages from about 8 percent to 33 percent. Encouraged by the Club and helped by loans from banks, many women have started improving their household income through all kinds of agricultural and business enterprises such as poultry, goat and sheep husbandry, dairies, blanket and basket weaving, selling of fish and bangles, and even the establishment of lumber mills. The Women's Clubs act as surety for the bank loans, and because of this and peer pressure, no woman has defaulted on a loan to date out of over 1500 recipients (Arole and Arole, 1982: 17-19).
Women's Clubs have also facilitated the work of the village health workers. Women have been taught about health, nutrition, sanitation, pregnancy, child care, and family planning by the village health worker. Now there is someone in the village capable of handling deliveries and other such emergencies if the village health worker is away. The presence of the Women's Club and the Farmers' Club also make it difficult for the village health worker to overcharge for medicines or be negligent in her work.

4. Farmers' Clubs

Farmer's clubs were organized to bring young men together to work for the benefit of the whole village. Helping the poor has been one of the primary objectives of these clubs. Being a chronic scarcity area, many other voluntary agencies as well as the government have initiated "food-for-work" programs in the taluka. The farmer's clubs have organized some of these and have built access roads, developed land, and dug irrigation wells. Under land development fields are levelled, contour bunds are built, and small check dams are constructed across streams--all contributing to the conservation of water and control of soil erosion.

They have reclaimed fallow land and distributed it to the landless. Some of the reclaimed land is commonly cultivated to provide food for the supplementary feeding program for children. More recently over 100,000 saplings have been planted, watered and protected in the villages of the project area under afforestation schemes sponsored by the government and the project. Ghodegaon village was planning to construct a drip irrigation project for the
village. They have also built houses for the harijans in the village. All the project villages also had safe drinking water accessible to everyone irrespective of caste.

G: Conclusion

The overall positive impact of the Comprehensive Rural Health Project is quite evident in Jamkhed as well as the surrounding villages. The Center at Jamkhed has not only become internationally famous, but people from all over the district and outside come there to seek medical care. Almost daily there are visitors from all over the world coming to study the Project. The project directors themselves have been active in training village health workers and health guides. They have been advising the government and other voluntary organizations on rural health and development.

The windmill which generates enough power to pump water from a well, solar-heated hot plates on which chappatis are cooked, the thatched huts which double as meeting halls and dormitory for the village health workers and families of patients, the brightly painted bullock carts which transport patients to and from Jamkhed to the Project hospital one kilometre away, are examples of adoption of appropriate technology for rural development.

The Project has already been extended to the neighbouring taluka since 1978 and it is planned to cover the 200 villages consisting of all the villages in these two talukas in the near future. Thus the Jamkhed project has become an important milestone in rural health care and integrated rural development in India.
Notes to Chapter VI

1. The British Broadcasting Corporation made a documentary on the Project which was aired in Great Britain and Australia soon after the project directors were awarded the 1978 Ramon Magsaysay Award for community leadership. Ever since, western visitors and researchers have been flowing to the Project. The villagers are somewhat weary of the many researchers who pounce upon them with bulky questionnaires.

2. A group of representatives from international voluntary agencies was visiting the center for two days as part of a 'Seminar on Reaching the Rural Poor' organized by the Centre for the Study of Rural Development, Ahmednagar College. The Project Centre at Jamkhed now has facilities for boarding and lodging for groups of about thirty for academic and training purposes.

3. Articles 15, 16, 17 of the Indian Constitution deal with non-discrimination, equality of opportunity in matter of public employment, and abolition of untouchability respectively. Article 17 states: "Untouchability" is abolished and its practice in any form is forbidden. The enforcement of any disability arising out of "untouchability" shall be an offence punishable in accordance with law (Ramachandran, 1968: 514).

4. Numerous studies on the condition of Harijans in India point out that poverty, illiteracy, and inequities are most prevalent among them today (Gupta, 1984; Jayaraman, 1981; Joshi, 1982; Revankar, 1971)
Chapter VII

COMPARATIVE ANALYSIS

In chapters V and VI we discussed two health care organizations as knowledge utilization systems. In this chapter we shall make a comparative analysis of these two systems to understand their differential impact, if any, on rural development. First we shall compare the two systems on the ten variables as defined in chapter Two. Then we shall examine each of the eleven hypotheses to see whether the data presented support them.

A: Variables in the Study

Knowledge utilization effectiveness is the dependent variable which leads to rural development. The nine independent variables are: research knowledge, policy maker perspective, policy maker actions, technical expert recommendations, change agency perspective, change agent behavior, social environment, adopter perspective, and adopter behavior. We shall first summarise the data we have presented in the two case studies on each of these variables.

1. Research Knowledge

Research knowledge refers to all the scientific knowledge on health care and related areas including social structure, epidemiology, population and family planning, nutrition, maternal and child health, communicable diseases, attitude towards health and diseases, drugs and systems of medicine, political economy of health and so on. We have summarised this data in Table 27.
<table>
<thead>
<tr>
<th>Indicators</th>
<th>Government System</th>
<th>Voluntary Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Knowledge</strong></td>
<td>Efficacy of Allopathic drugs; Ayurvedic treatments; Breast feeding babies.</td>
<td>Simple remedies for most common illnesses; Breast feeding babies.</td>
</tr>
<tr>
<td><strong>Non-positive Knowledge</strong></td>
<td>Illness is curse of gods; Go to temple first when ill, then seek medical help; TB, leprosy patients isolated; snake bite victims left to die; No latrines, indiscriminate defecation; Inadequate sewage disposal system; Drink contaminated water; Cutting umbilical cord with unsterilized instruments; Wearing charms; Injections better than pills; Tetanus toxoid injections to induce abortion; Fear of immunizing children.</td>
<td>Illness is curse of gods; Go to temple first when ill; TB and leprosy patients isolated; Leave snake bite victims in temple to die; No latrines, indiscriminate defecation; Inadequate sewage disposal system; Drink contaminated water; Passing a pitcher of water to woman in labor; Cutting umbilical cord with unsterilized instruments.</td>
</tr>
</tbody>
</table>
## Table 27 (contd.)

Research Knowledge Available on the Government Health Care System and the Voluntary Health Care Organization

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Government System</th>
<th>Voluntary Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nutrition</strong></td>
<td>Avoidance behavior—certain essential foods prohibited to pregnant women and children.</td>
<td>Avoidance behavior—certain essential foods prohibited to pregnant women; Children not given water or solids in first year; No breast feeding of babies; Fear vitamin pills for abortion.</td>
</tr>
<tr>
<td><strong>Poverty</strong></td>
<td>Most people too poor to come to hospital when sick; Panchayat has no money to build gutters, latrines.</td>
<td>Most rural people are too poor to afford a trip to hospital for minor ailments.</td>
</tr>
<tr>
<td><strong>Social structure</strong></td>
<td>Caste-based; upper castes dominate decision making; Preference for male offspring.</td>
<td>Caste-based; upper castes dominate decision making; Harijans, women, and the poor have little power; Preference for male offspring; Alcoholism among men; Indebtedness among the poor.</td>
</tr>
</tbody>
</table>
Thus research knowledge available on the two systems do not vary much although the problem is better understood by the Jamkhed Project because the project leaders had undergone advanced training in public health as well as undertaken a socio-economic survey of the region before starting their health delivery services. The doctors at the government system do have an understanding of the problems of poverty and inequality but they felt that they could do nothing much about it.

We shall now present a summary of the data we have on the next three variables, viz., policy maker perspective, policy maker actions and technical expert recommendations (Table 28). The policies that are implemented by the government health care system are set by the policy makers at the national level with very little consideration given to local conditions or needs. Targets and strategies are set by policy makers and experts for the whole country. Most of the attention has gone to family planning rather than to health care. The strategy of delivering health care services through primary health centers has been recommended by the Bhore Committee (1943) and is still being followed. Even the recent interest in achieving "health for all by 2000 AD" has not changed the approach significantly. One of the few notable changes has been the training of health guides for every village.

In the case of the voluntary health organization, policies are set by the change agency and its leaders themselves. This makes it more responsive to immediate needs. They have also actively sought the cooperation of the participating villages improving the chance of success.
Table 28


<table>
<thead>
<tr>
<th>Variables</th>
<th>Government System</th>
<th>Voluntary Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Maker</td>
<td>Population growth too rapid; Provide more medical personnel and facilities to achieve &quot;Health for All by 2000 AD.&quot;</td>
<td>Make health care accessible to all especially the poor, the women and the children.</td>
</tr>
<tr>
<td>Perspective</td>
<td>Incentives and disincentives for population growth;</td>
<td>Go to people and find out problems and solution;</td>
</tr>
<tr>
<td></td>
<td>Use all government machinery to achieve family planning targets.</td>
<td>Plan solutions with the people.</td>
</tr>
<tr>
<td>Policy Maker</td>
<td>Reduce birth rate to 23; Treat communicable diseases</td>
<td>Most diseases curable with personal care and with ordinary drugs administered by a trained village health worker who is always available in the village.</td>
</tr>
<tr>
<td>Actions</td>
<td>Provide more medical personnel per unit of population; Build more health care facilities.</td>
<td></td>
</tr>
<tr>
<td>Technical Expert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommendations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 29
Change Agency Perspective, and Change Agent Behavior of the Government Health Care System and the Voluntary Health Care Organization

<table>
<thead>
<tr>
<th>Variables</th>
<th>Government System</th>
<th>Voluntary Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change</strong></td>
<td>Infrastructural Approach;</td>
<td>Interpersonal Approach;</td>
</tr>
<tr>
<td><strong>Agency</strong></td>
<td>We have no power, not enough money, not enough facilities; No work satisfaction; Higher-ups do not listen to us; Rural work not rewarding; Health guides are good for family planning persuasion.</td>
<td>For Love of Jesus; Comprehensive approach to health care; First help the poor, women, and disadvantaged; Train people to take care of their own health; Help people to help themselves.</td>
</tr>
<tr>
<td><strong>Change Agent</strong></td>
<td>Meet family planning targets; Treat illnesses; Do one's duty; &quot;We tell people, they don't listen to us&quot;; Health guides the lowest rung in the bureaucratic ladder.</td>
<td>Get people's cooperation; Reach the poor, women and disadvantaged first; Village health worker is one among the villagers and the most important change agent.</td>
</tr>
<tr>
<td>Variables</td>
<td>Government System</td>
<td>Voluntary Organization</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Social Environment</td>
<td>Caste structure difficult to change; Legislation to remove inequality.</td>
<td>Caste structure entrenched but can be changed by deliberate action</td>
</tr>
<tr>
<td>Adopter Perspective</td>
<td>Large families good for agricultural work; Male children preferred; &quot;Government promises, but never gives.&quot;</td>
<td>We can do things on our own with help; We also have knowledge; Male children preferred; Small families better now.</td>
</tr>
<tr>
<td>Adopter Actions</td>
<td>&quot;We have asked government&quot;; &quot;Panchayat has no money&quot;; &quot;Without money little can be done about anything.&quot;</td>
<td>Mothers' Clubs; Farmers' Clubs; Nutrition programmes; Non-formal education classes.</td>
</tr>
</tbody>
</table>
Table 31
Knowledge Utilization Effectiveness of the Government Health Care System and the Voluntary Health Care Organization

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Government System</th>
<th>Voluntary Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National average</td>
<td>Control villages*</td>
</tr>
<tr>
<td>Birth Rate per 1000</td>
<td>33 (1981)</td>
<td>30 (1975)+</td>
</tr>
<tr>
<td>Infant Mortality per 1000 live births</td>
<td>122 (1981)</td>
<td>67 (1975)+</td>
</tr>
<tr>
<td>Crude death rate</td>
<td>9</td>
<td>10.5 (1975)+</td>
</tr>
<tr>
<td>Immunization</td>
<td>--</td>
<td>38% (1982)</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>--</td>
<td>31% (1982)</td>
</tr>
<tr>
<td>Antenatal care</td>
<td>--</td>
<td>2% (1982)</td>
</tr>
<tr>
<td>Deliveries conducted by trained staff</td>
<td>--</td>
<td>10% (1982)</td>
</tr>
<tr>
<td>Deliveries conducted at home</td>
<td>--</td>
<td>62% (1981)+</td>
</tr>
</tbody>
</table>

* Wherever data from Pathardi are unavailable data from control villages of the Jamkhed project are used for comparative purposes.


Table 31 (contd.)
Knowledge Utilization Effectiveness of the Government Health Care System and the Voluntary Health Care Organization

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Government System</th>
<th>Voluntary Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Involvement</td>
<td>Village panchayat selects health guide; Help organize eye camp, disease detection camp, family planning camp.</td>
<td>Village panchayat selects village health worker; Provides infrastructure for local health work; Volunteers help with health surveys, mass immunizations, family planning, sanitation. Provides food for nutrition program.</td>
</tr>
<tr>
<td>Community Development Activities</td>
<td>[No specific community development activities under the government health care system]</td>
<td>Young farmers' clubs undertake animal husbandry, social forestry, and rehabilitation. Mother's clubs conduct non-formal education classes, cottage industries, assist village health worker.</td>
</tr>
</tbody>
</table>
Policy maker perspective, policy maker actions and technical expert recommendations differ between the two organizations (Table 28). First of all in the government system these are undertaken at the national level and very little input from local levels is involved. This is not bad in itself as it will give direction to development activities. However, much of the focus of these steps are lost when translated to the needs and capacities of the state and district levels. Family planning is the major focus of the policy makers and we have noted in chapter IV how there is much disparity between states in the achievement of targets. The case of the sudden drop in sterilizations when the Janata government was in power points at the impact of policy maker perspective and actions on adopter behavior.

In contrast to this the voluntary agency is not bound by any of these. While the government system is concerned about meeting the targets, voluntary organizations can work at their own pace. This has also led to the proliferation of voluntary organizations in some regions to attract international aid. In the case of the Jamkhed project the project directors themselves defined the problem and set their targets enabling them to constantly monitor their achievements and drawbacks.

The government system has always followed an "infrastructural" approach to solving rural health care problems. The emphasis has always been on providing more infrastructure such as primary health centers and sub-centers, doctors, nurses and various types of para-medics such as leprosy workers and malaria workers. It was the
Jamkhed project which came up with the idea of training a local woman to deal with health care needs of the people. The idea has been adopted by the government through its community health volunteer scheme, now known as health guides scheme. We have noted earlier that most of the health guides initially chosen were males thus overlooking the concern of the Jamkhed project to reach the women and children first and foremost in health care. In 1982 the Government of India has belatedly acknowledged this fact by suggesting that "emphasis has been laid on selecting women as health guides" (Ministry of Health and Family Welfare, 1982: 19). The Ahmednagar district has been selected for implementing this idea with the help of the Jamkhed project leaders.

For the government system the district and the block level health care system is the change agency (Table 29). Primary health centers are the focus of its activities. Doctors and other paramedical personnel do their jobs despite lack of work satisfaction. Doctors feel that they are not properly rewarded for doing such hard work compared to their colleagues working in the cities or in medical colleges. They plead that they have very little power to influence the rural power structure or to improve sanitation or provide safe drinking water. Much of their energy goes into meeting family planning targets. They state however that the addition of health guides facilitates their task of family planning persuasion.

The Jamkhed project, on the other hand, advocates a comprehensive approach to rural health care. The project leaders had decided to work first and foremost for the poor and disadvantaged. They wanted
the involvement of the communities right from the beginning both through discussion and donation of time and money. Instead of waiting for the sick to come to the hospital they decided to reach them on a regular basis through the mobile health team. The village health worker, chosen by and from the village, became the main change agent in comprehensive rural health care. By selecting only women as village health workers the Project also was able to reach the women and children first and more effectively.

In both the government system and the Project area the social environment is characterized by traditional caste structure with the upper castes well entrenched socially and economically (Table 30). Despite legislation banning untouchability and other forms of discrimination, the poor, the harijans and the women still suffer many disadvantages. The Jamkhed project leaders have often tried to change this through deliberate action. For example, wherever possible they select harijan women as village health workers. Training of village health workers belonging to all castes together has also led to the slow break down of caste barriers.

While the adopters in the government system tended to depend on government to do things for them, the villagers under the Jamkhed project have shown a lot of initiative. A sense of pride for their village was noticeable among the project villagers--something absent from the villages under the government system. This can be explained by the various community development activities that have been initiated after the inception of the Project such as Farmers' clubs, mother's clubs, non-formal education classes. No such activities
exist in the villages under the government health care system which is concerned with the immediate problems of family planning, and preventive and curative care. There may be some farmers' clubs or mother's clubs in the villages under the government system but not within the purview of the health care system. For example the Eye camp at Kharvandi village which we visited, was organized by the Youth Club and the panchayat samiti of the village (See chapter III).

The overall impact of the Jamkhed project as compared to the government system is significantly greater (Table 31). Pathardi is an average taluka in terms of birth and death rates. It has fairly low infant mortality rate (67 as against a national average of 122 per 1000). Infant mortality in the Jamkhed project area has been reduced to 41 per 1000 in 1982 from a very high 180 per 1000 in 1971 at the inception of the project. Data from the project area are more reliable because the project villages have been maintaining accurate data for each village and the health worker would know of any infant death in her village. We do not have data on malnutrition, antenatal care, deliveries conducted at home etc. for the government system because such data are not routinely collected or maintained. Therefore we have presented some data from a survey of control villages undertaken by the Jamkhed project as part of their own evaluation. Malnutrition has been reduced from 30 percent to 6 percent in the Project area while it is still 31 percent in control villages. As against one percent of deliveries conducted by trained staff in 1971 it has gone up to 64 percent in 1982 in the project villages while it is only 10 percent in the control villages. Again
95 percent of the deliveries in the Project area were conducted at home as against 62 percent in the government system of Pathardi taluka.

Thus it can be concluded that the Jamkhed project has had significant impact on improving the health status of the villages where it has been active. The government system in Pathardi taluka has begun to show some improvement in recent years in the areas of family planning and deliveries conducted at home (See Tables 20 and 21 in Chapter V).

B: Testing of Hypotheses

Having summarised the data we have presented on the case studies of a government rural health care delivery system and of a voluntary rural health care organization, we shall now discuss the hypotheses one by one checking them against the data we have.

Hypothesis One

The greater the coherence among the various stages of the knowledge utilization system, the greater the rural development.

Judging from the overall impact of the two systems we concluded that the Jamkhed project has been more successful. We have also seen that the various stages of knowledge utilization in the government system are somewhat disjointed in that the stages of problem identification, problem definition and problem translation involving researchers, policy makers and technical experts take place at the national and state level while program formulation involving the
change agency takes place at the district level, with program implementation and program adoption undertaken at the block and village levels. Although many national programs are launched with impressive targets and huge budgets, they do not necessarily reflect local problems and needs. Moreover most of the national programs are focussed on solving individual problems such as leprosy eradication, malaria eradication, and birth control. Within the purview of the government health care system, there are no programs to reduce poverty or inequality which are some of the fundamental causes of ill-health and malnutrition, nor are there programs to improve the low status of women and the harijans who are the most vulnerable groups in regard to health care.

Due to the centralized nature of decision making there is virtually no participation of the villagers in program formulation in the government system. This has been recognized as a draw back and local participation is sought in program implementation notably in the selection of health guides. However, with the government bureaucracy working through the established channels of authority, this participation is limited to the village sarpanch and the panchayat samiti at the maximum. A tendency to wait for the government to do things for them was noticeable among the villagers under the government system. For example, to queries regarding the absence of gutters and latrines these villagers responded with, "We have asked the Zilla Parishad," "We have asked the government," "Government says,'we will give, we will give, but never gives.'" [They have been asking for cement to build gutters]. This was very much in contrast
to some villagers under the Jamkhed project who, while acknowledging
the help they had received, said that they could manage their affairs
even without the help of the project now.

In the case of the Jamkhed Project the coherence among the six
stages of knowledge utilization system was possible because the
project leaders themselves identified, defined and translated the
problem with the participation of the would-be adopters. The
participation of the adopters has been actively sought in the
formulation, implementation and adoption of the program. The
comprehensive nature of the Project has also contributed to its
success. It has been pointed out that it is not health care but food
which is the first priority of the poor villagers; but health care
could be a good entry point into a community (Sevagram Medico Friends
Circle, 1983). While the government system is geared to achieving
targets, the Project has been more flexible about setting targets
though there is a strong sense of commitment to achieving
comprehensive rural development. Some persons in the government
system did point out that while they were required to cater to all the
people irrespective of whether they wanted to be helped or not the
Project started its activities in a village only on invitation and a
promise to provide certain facilities. This indeed is a basic
difference and explains the much greater impact of the Project. There
is also a general distrust among the people regarding the efficiency
of the government system especially since the services are free. The
Jamkhed Project has also shown that people are willing to pay
reasonable and affordable cost for health care.
Another aspect which distinguishes the Jamkhed Project from the government system is the built-in evaluation system. The project is able to monitor the performance of its change agents through weekly meetings and constant in-service training. The village health workers share their day-to-day experiences with their colleagues during the weekly meeting with the project staff. The mobile team also reinforces the training needs of the health worker. This type of constant support and encouragement is missing in the government system even though the health guides visit the primary health center twice a month mainly to report on their activities and to collect their honorarium and to replenish their stock of medicines. Because the Project leaders make their own policy decisions, it is easier for them to change directions or try new methods as they evaluate their various activities. Thus when they realized that the auxiliary-nurse-midwives they placed in the villages were finding it difficult to live alone they arranged marriages for them with young men who were also employed by the Project. But then they found out that these women became pregnant and were making excuses not to live in the villages. Finally they took up the challenge of a village to train one of its own women to deliver health care to the villagers. This proved to be the turning point when they found out that training local women was the most essential step in reaching their target groups of women and children. This would not have happened in the government system because, as Dr. Mabelle Arole put it: "The [government] bureaucrats are afraid of failure."
Therefore we can conclude that the greater success of the Jamkhed project in achieving rural development is due to the greater coherence among the six stages of its knowledge utilization system as compared to the government system where there is less coherence.

**Hypothesis Two**

*The more closed the structure of a social system, the less the impact of modern knowledge on that system.*

The overall impact of a project may be high or low but it often varies greatly from village to village. Thus we noticed that some villages in the government system were better served by the government system while others looked neglected. In Jamkhed too, the project has had greater impact on some villages than others. Apart from locational factors such as distance from the health facility and frequency of bus service which affected accessibility, social structure is an important factor in the impact of modern knowledge on that system. Thus an influential resident, an enlightened leader, or a dedicated change agent can contribute to greater impact.

In Pathardi taluka, Paghori-Pimpalgaon village, which is only eleven kilometers away for the Taluka Civil Hospital, is better served by the government system because it has a Rural Health Unit, which is visited by a doctor daily, set up mainly though the influence of the Chief Engineer of the Public Works Department of the district who hails from this village. If one were to judge the need, Kharvandi village, which is twenty kilometers away from the nearest health facility, would have been more deserving of having such a facility. Thus an influential native son was able to bring a facility to his
village helping to improve its accessibility to health care.

Kharvandi village, on the other hand, has been asking for a health facility since the 1950s and has been promised with the next primary health center.

In Jamkhed, visitors are frequently taken to Ghodegaon which is considered an ideal project village. This village has a brahmin as village health worker, a harijan as sarpanch, another harijan as the coordinator for their proposed sprinkler irrigation system. The villagers have built houses for all its harijans with gobar gas connections, and there was talk of making it a "tourist" centre as an example of successful rural development. Its biggest landlord—a trained non-practicing lawyer—was very active in the development activities of the village. During our visit to this village the streets were clean, and the courtyard was painted in bright colors. The villagers explained that they wanted their village to look colorful because they were proud of it. This is probably an exceptional village where an enlightened leader and a dedicated change agent has been instrumental in bringing about many positive changes.

Sarola, another project village, has a gymnasium and a library was under construction. A member of one of the influential families of the village is a professor in an Agricultural University and has taken the leadership in many community activities. Another member who is retired from the army has founded a gymnasium for the youth. Even before the Project started its work in Sarola in 1977, this village had been exposed to modern knowledge. At the time of our visit they
were planting several hundred trees as part of a social forestry project sponsored by the Project and the government.

On the contrary, Deorai which is situated right on the high way with frequent bus service just three kilometers from the Tisgaon primary health center, is far from an ideal village. The health guide was an employee of the sarpanch whose family owned a substantial portion of the cultivable land of the village. The village streets were full of puddles and swarms of flies all over did not seem to bother anybody. The health guide was complaining that he has not provided with TCL powder to disinfect the drinking water in the village well. The sarpanch did not think the health guide was of any great use in improving the sanitary condition of the village.

Thus based on the above observations, we can say that the more closed the structure of a social system the lesser the impact of modern knowledge on that system or the more open the structure of a social system the greater the impact of modern knowledge on that system. This argument can also be extended to the two organizations as knowledge utilization systems. Due to the relative openness of the voluntary organization, there is greater impact of positive knowledge on that system.

Hypothesis Three

A change agency headed by a charismatic leader is more effective in program implementation than a change agency headed by a bureaucratic leader.

It is easy to distinguish the two types of leadership in the two systems. Government system is characterized by bureaucracy in the
sense of having clearly laid out rules, regulations and procedures
guiding its activities. Thus the district health officer knows what
his duties and responsibilities are. There is clear delineation of
tasks for each of his subordinates who implement the various
government programs. Therefore it would seem that the government
system should be more effective in program implementation following
the logic of bureaucratic efficiency. Within its limitations of
budgetary and environmental factors such as poverty and famine the
government health care system of Ahmednagar district and Pathardi
taluka in particular is doing a fair job. There were no glaring
problems within this government system. The fact that the Ahmednagar
district has been selected for implementation of the health guides
scheme on a pilot basis means that it is highly thought of within the
Maharashtra state. Therefore our hypothesis needs more careful
scrutiny to find out whether indeed it is supported.

The Jamkhed project also has a bureaucratic structure in terms of
rules and regulations, bookkeeping etc. It also has a fairly
clear-cut organization structure (Figure 10 in Chapter VI). However
there is much flexibility in the day-to-day operations of the
Project. The Project staff meets every morning for prayer, the
directors announce their travel plans, if any, and special tasks are
allocated to the staff. The village health workers also participate
in these meetings thus fostering a sense of community among all the
project members. Staff members such as leprosy technicians and social
workers also help with health surveys or mobile health delivery.
There is no strict time schedule for such work. Villagers are usually
available in the mornings and evenings. So the mobile team or a survey team has to visit the villages at that time in order to maximize their efficiency.

Most of the time the Project leaders are not around to supervise the staff but their authority is implicit even in their absence. The Project villagers and the staff agree that the directors are quite charismatic in their leadership. The very fact that they chose to do voluntary work in their villages instead of setting up a private hospital in one of the rich regions of the state itself speaks for their commitment. Dr. Raj Arole is a native of Ahmednagar district and his parents worked in Jamkhed. Thus he belongs to the region and understands its people well. Dr. (Mrs.) Mabelle Arole hails originally from Tamil Nadu but now speaks Marathi—the local language—fluently and has adapted to the place quite well. Their work in Jamkhed has made them internationally famous with recognitions such as the Ramon Magsaysay Award for community leadership conferred on them in 1979. The government of India has adopted their concept of training local people as village health workers. The Aroles now serve on various government committees on population and health. It is not unusual to hear academics and even bureaucrats suggest that what India needs is an Arole for every district. This also raises the question of replicability of the project and especially of training leaders like the Aroles. It seems easier to train bureaucratic leaders than leaders with charismatic qualities.

While operationalizing this hypothesis we suggested that one of the reasons for the success of a charismatic leader in village India
is because the problems of rural development are still traditional. A bureaucratic approach to problem solving will be of minimal impact since the problems do not lend themselves to bureaucratic solutions. An example would clarify this point. Usually when a well is to be dug in a village, the leaders of the village see to it that it is dug near to their homes. The leaders are mostly from the upper castes and the harijans--the former untouchables--may not be permitted to draw water from the well in the upper caste locality.

The Aroles identified lack of safe drinking water as one of the major problems of health in the villages and arranged to dig a well in each village. They instructed the engineers to locate the well in or near the harijan wada whenever possible as often more than one suitable source of water could likely be found. This has enabled the harijans to have access to safe drinking water first and the upper castes have had to go to the harijan wada to draw water. This strategy has also helped in slowly breaking down caste barriers. The Aroles also made sure that they went to every house in a village and not to the leaders' homes only. Government bureaucrats will not dare to take this type of action. We also noticed that the mobile health team started their village visit with the harijan wada first. We were told that this was purposely done to break the tradition of all visitors first going to the village sarpanch's house. If the project directors were not considered charismatic the village leaders would have resented such behavior.
Therefore our comparison of the government bureaucrats with the Project directors supports our hypothesis that a charismatic leader is more effective in program implementation than a bureaucratic leader.

**Hypothesis Four**

A change agent who is homophilous with the adopters on variables relevant to the situation is more effective than a change agent who is heterophilous (Rogers, 1973: 128).

This hypothesis explains one of the crucial aspects in the success of program implementation. Change agent effectiveness is perhaps the most crucial aspect in knowledge utilization for rural development. Literature on various change agents such as gram sevaks, dais (Rogers, 1973) suggest that homophily with adopters is the key variable in change agent effectiveness. At the same time too much homophily with adopters can also hinder change agent effectiveness as the case of dais as family planning promoters suggests (Rogers and Solomon, 1975: 27).

The government system has depended on auxiliary-nurse-wives and other para-medical workers to deliver health care to villagers. These persons are almost always from urban areas or are urban educated making them heterophilous with the adopters. It is not easy for them to gain rapport with the villagers. In the beginning the Jamkhed project also placed auxiliary-nurse-midwives in the villages and we have described how they proved ineffective in providing health care. The idea of training local women to provide simple curative care and preventive care was a result of this experience.
The first few village health workers proved to be very successful mainly because they were homophilous with the adopters especially with women who were the prime target group of the Project. Even their success did not come overnight as we have described in chapter VI. This female village health worker was homophilous with other women in the village as she was one among them with similar life experiences such as pregnancy, child birth and sterilization. They were not highly literate or urban educated as the nurses were. Some of them were even illiterate. This also enhanced their homophily with adopters. They were able to communicate more effectively with their peers in their vernacular. Outsiders often do not know the local idioms and are ineffective in communication using literate idioms and technical language. Local informal networks also help the village health worker to find out about pregnancies, abortions, illnesses etc. which are often not discussed with outsiders.

The government also adopted this idea of training local people while formulating its community health volunteer scheme. However they did not emphasize recruiting only females for this scheme. On the contrary the requirement of high school education made it imperative that most of the community health volunteers (health guides) were males. Male health guides are naturally heterophilous if the primary target group of rural health care has to be women. As many of them agree, women do not confide matters relating to birth control, pregnancy and child birth to a male health guide. It has also been noted that for many men, selection as a community health volunteer (health guide) who was paid an honorarium of Rs. 60 per month was an
escape from unemployment rather than an opportunity to serve the
city in its health care needs. Even the doctors in the government
system agreed that the female health guides were more conscientious in
their work and hence were more effective. We asked a community leader
what he thought were the differences between a government nurse and a
village health worker trained by the Jamkhed project. His answer
amplifies the importance of homophily in the success of change agents:

Q: What is the difference between a government nurse and a
village health worker of the Project?

A: Government nurse would not come home and sit with us. They
would sit only on a chair. If somebody called, she would say:
'Your house stinks'. Yamunabai [VHW] is not like that.
Government nurse would ask: 'How many children?' 'Three.'
'Go, do operation.' Yamunabai goes to each house, helps the
woman to cook, gives some suggestions, praises her. Slowly
she talks about children and family planning. She would
inquire about health, periods etc. There is a big difference
between the government nurse and Yamunabai. Yamunabai looks
after the mother and the child from the time it is conceived
until it is five years old. That is why there is no infant
mortality in our village.

We asked a government health guide who was the very first village
health worker trained by the Jamkhed project whether she preferred
working for the Project or for the government. Her answer points out
some of the reasons why the government functionaries are less
effective:

Q: Do you prefer to work for the Project or the government?

A: We like to work for the Project. We get trained at the
project hospital but work for government. But we get good
training and cooperation at the Project. There is less
cooperation at the Zilla Parishad. We are bound to work only
for eight hours in the Zilla Parishad. There cannot be time
limit in helping people. We are appointed as volunteers and
are not paid a salary. People working on salary work only for
eight hours and not more. But we look for the development of
the village and not the fifty rupees we get monthly.
Thus a deep concern for the development of their own village is one of the reasons for the effectiveness of the villagers. Such concern and commitment is rarely seen in government servants where compliance to rules and regulations is more important than rural development. We noticed that the health guides of the government were more concerned about the meager honorarium they were receiving while the village health workers of Jamkhed expressed satisfaction from the respect they had gained through their work in their villages. In one case a village health worker became so effective that her village unanimously elected her the sarpanch. In another case the villagers wanted to elect the harijan village health worker, who was treated as an outcaste before, as their sarpanch challenging the incumbent sarpanch of the upper caste. The Project directors had to advise the villagers not to elect her so that there would be no caste conflict. The old sarpanch has now become an ardent supporter of the project after realising that his position was in jeopardy. This village health worker has become a highly effective resource person for the Project in selecting other health workers. All these examples corroborate that homophily with adopters on variables relevant to the situation leads to change agent effectiveness.

Hypothesis Five

A change agent who has both competence and safety credibility will be more effective than a change agent with competence or safety credibility only (Rogers, 1973: 126).

This hypothesis goes in conjunction with the previous hypothesis. Competence credibility refers to the technical expertise
a change agent has and safety credibility refers to trustworthiness. An ideal change agent would have both of these. A change agent who is homophilous may not have competence as in the case of dais who were untrained and mostly illiterate. When they were trained and given delivery kits which made them look like medical representatives people did not feel comfortable with them either. A nurse who is trained in modern health care has technical expertise and hence competence credibility. What she often lacked was safety credibility due to lack of homophily with villagers. We have the example of the auxiliary-nurse-midwives who were placed in the villages by the Jamkhed project in the beginning. Their failure to stay on in the villages can also be attributed to their lack of safety credibility as local women did not feel at ease with them because they were outsiders, educated, city-bred and modern.

The village health workers of Jamkhed are ordinary local women, often illiterate and belonging to the lower castes. How did they then succeed? They did not have competence credibility as they were not learned or from the upper castes. Their main asset was safety credibility. A local woman--middle-aged, with children, having undergone tubectomy--when trained by the Project gained competence to deal with common health problems of the village. We have seen in chapter VI that the success of the village health workers was not achieved over night. In the beginning most of them were scared to give medicines or to conduct deliveries. Gradually they won confidence of villagers especially due to the support and encouragement of the doctors and the mobile health team. The doctors
and nurses never correct the village health workers in the presence of the villagers. This enhances their competence and safety credibility among the villagers. It has been further enhanced by the results of the project's work through the health worker and mobile health team in areas such as reduction of infant mortality, curative care and village sanitation.

Village women feel at ease to discuss their health problems with someone they can trust. We have noted that male health guides in the government system felt that they could not gain safety credibility with women. The female health guides in the government system, in the opinion of doctors themselves, are more effective than male health guides in rural health care. Therefore a successful change agent will be one who has both safety and competence credibility. It seems easier to enhance competence credibility of someone who already has safety credibility than vice versa as the experience of the Jamkhed project and especially its village health workers suggests.

Hypothesis Six

The greater the legitimation of change agents by system leaders, the greater the impact of change agents in knowledge utilization (Dissanayake, 1982: 14).

Approval and support of change agents by local leaders is crucial in their success. The very reason why Jamkhed was chosen for program implementation by the Aroles was due to the interest shown and support offered by the local leaders. That has proved to be one of the reasons for its continued success. The village health workers trained by the project are selected with the active participation of the
villagers. Each village continues to support the work of the Project and the health worker. As the village does not directly pay the honorarium to the health workers, they cannot be bullied by the local leaders. There have been instances where the sarpanch of a village tried to extract part of the honorarium from a health worker (Chapter VI). In some cases the village health workers were initially ridiculed. But overall the local leaders of Jamkhed have supported the work of the project through the mobile team and the village health workers.

In the government system, on the contrary, the health guide is seen as the lowest rung in the ladder of health bureaucracy. Until the community health volunteer scheme was started in 1977, the auxiliary-nurse-midwife (ANM) was the lowest functionary in the government system. Now the position of the ANM has been relatively upgraded with the introduction of health guides below her. According to Dr. Raj Arole, the director of the Jamkhed project, one of the reasons for the potential failure of the health guides scheme is the inability of the ANM to understand the true role of the health guide. Instead of treating her as someone who is responsible for the health of the villagers, the ANM treats the health guides as merely her aides primarily in family planning persuasion. The Aroles were talking about training auxiliary-nurse-midwives who would understand the true role of health workers.

Thus legitimation by system leaders is crucial to the success of change agents in knowledge utilization.
Hypothesis Seven

Innovation based on ideas borrowed from the adopters will be more readily accepted than innovations based on imported ideas (Arensberg and Niehoff, 1971: 175; Dissanayake, 1982: 17).

Literature on diffusion of innovations is replete with examples of innovations which failed because they were planned for different cultural milieu or social systems. The idea of gram sevaks (extension agent) is borrowed from the agricultural innovation experiments in the United States and other western countries. They have not been very successful in the Indian context mainly due to the hierarchical social structure of the villages which does not facilitate diffusion of modern knowledge. However if an innovative idea is borrowed from the adopters themselves it will be more readily accepted. This explains the success of the village health workers in the Jamkhed project area. We have noted that the idea of training a village woman was first suggested to the project leaders by villagers themselves. The Aroles had started with training and placing an auxiliary-nurse-midwife in each village to provide curative and preventive care at all times. These nurses did not fit into the village social system and found it difficult to stay on. The villagers are sensitive people who recognized this problem and suggested training of one of their women. The project leaders took it up more as a challenge. However in a matter of six months this woman had brought about remarkable change in her village.

Even to start its activities in a village the Project insists on the invitation of the village with promises of certain facilities to
be provided. This itself makes the idea of starting the project activities in a village that of the villagers. The villagers view the introduction of mobile health team, mother's club, young farmers' club, and the selection and training of a village woman as health worker as their own ideas which they want to implement with the help of the Jamkhed project. Thus there is a greater acceptance of the innovative ideas right from the beginning among villagers. This is most crucial to the success of these programs.

On the contrary, all the innovative ideas to be operationalized and implemented in the rural areas under the government health care system are diffused from above. People's participation is sought at the final stage of implementation which is usually limited to the few elected representatives of the village. Thus there is very little at stake for the villagers in the success or failure of any scheme. One of the arguments given in favor of the government is that it cannot be choosy about where it will start a scheme or not as there cannot be discrimination. This may be true but the government also lacks any mechanism by which innovative ideas of the villagers can be taken into account in project formulation.

At the Jamkhed project we came across another example of using local ideas and communication media to great advantage. Rural people are very fond of entertainment and there are many wandering entertainers such as puppeteers and magicians. Some of these like a magician can also fool people through their tricks. However these talents can also be used to educate people through entertainment. One of the most effective educators at the Jamkhed project is a former
magician who was converted after seeing its good work in his village. He now conducts demonstrations of his magic and explains to people that these are a hoax. Then he advises people of the need for taking care of their health and utilizing the services of the project. To convince leprosy patients not to lapse in taking treatment he has developed the following skit which he acted out for us:

We have prepared a drama for teaching about treatment and cure of leprosy. It goes like this: At first there is this song sung by a leper:

I am a leper and hungry due to my fate,
Please give me a piece of bread!
God will bless your children, god will bless you,
Please give me a piece of bread!

He collects pieces of bread and eats where he can find some water. There comes a rehabilitated leprosy patient who sees him and says: 'I have met you at Arole's hospital once, but you did not come back! I am cured now. You fool! You are still sitting like this. You are not cured because you did not continue taking medicines.'

Then he goes to the hospital and takes medications. He also learns carpentry there. Then he gets married and leads a happy life. Using this theme we educate people that leprosy can be cured and that those cured of leprosy can lead a normal life. (J40: Mr. Gulab S. M., 40, Magician turned health educator)

Usage of such indigenous communication media also enhances the effectiveness of the project in educating the villagers. A magician is still held in awe and reverence by old and young alike and his message is more easily accepted by villagers. The project also uses songs to educate the people. Rural people are verbally literate and many messages are easily conveyed through songs. During training the village health workers learn many songs dealing with various aspects of health, women's status, exploitation etc. These songs have become
educative as well as entertainment in villages where radios are a luxury and television is a distant dream. Such unorthodox styles of operation would be possible only where there is open communication with the adopters and willingness to involve everybody for achieving the program objectives.

**Hypothesis Eight**

Involvement of adopters from the early stages of knowledge utilization system, rather than involving adopters only in implementation will increase popular participation and knowledge utilization (Arensberg and Niehoff, 1971: 174; Dissanayake, 1982: 17).

This proposition builds on the previous one on borrowing ideas from the adopters. Popular participation is a much talked about idea in rural development. "Grass roots planning," and "bottom-up planning" are common phrases in the rural development literature. As we have noted before, involvement of the adopters right from the first stage of knowledge utilization will increase popular participation. This is what the Jamkhed project leaders have accomplished. Even though they had rather clear ideas about the nature of the problems and how to solve them, they went to the villagers to find out from them what they thought were the problems. Often the major health problem is not lack of hospital or doctors but it is the lack of drinking water or it is poverty. These problems have to be taken into consideration if effective solutions are to be found. Some of the best ideas are obtained from the people themselves. If the project
directors had not listened to them, the idea of training village women as health workers may have never been tried.

The Jamkhed project involves the villagers at all stages of knowledge utilization. Villagers are encouraged to come forward to start farmers' clubs, mother's clubs or nutrition programs. The Project then provides matching funds and technical expertise which are what villagers may be lacking in. Often there are funds available from government sources for various schemes but the villagers are unaware of them or do not know where or how to get them. The Project is also able to provide some funds for these activities from the profit made at the main hospital and from donations received.

As there is continuous input from the villagers into every stage of knowledge utilization there is greater participation in project activities. Some villages have shown very active involvement in project activities while others are not so involved. In hypothesis three we have given some reasons for this. Overall there is much greater involvement by adopters in the Jamkhed project area than adopters in the area under the government system. The obvious reason is the limited level of participation by the adopters in the various stages of knowledge utilization. In the government system participation by adopters is limited to the selection of the health guide, that too is confined to the few leaders of the village. As it happened in the case of the eye camp at Kharvandi village, the government system is often unable to carry out programs as planned. In this particular instance the team of doctors reached the village after five o'clock in the afternoon instead of at ten o'clock in the
morning with the result that many people from neighboring villages went away without waiting. According to some government workers themselves this is not unusual in the government system.

Medical officers blamed lack of vehicles in good running condition as a major problem. Another doctor told us of an instance where their jeep broke down a few miles down the road from the garage since the auto repairmen regularly cheat the government by using substandard tyres. Last year newspapers reported cases where contraceptive devices were destroyed rather than distributed to show inflated data on family planning achievement in Maharashtra state which is considered to be in the forefront in this area (Karkaria, 1985). These kinds of problems also undermine the credibility of the government system and the people are skeptical about the efficiency of the government system.

One of the fears expressed about the training of local people as health workers has been that they would become quacks and exploit the people. This has not happened in the Jamkhed project villages since each village is well involved with the project and knows about the duties of the village health worker. The mother's club and the Young farmers' club act as guardians of people's rights in this case. In many instances the health worker has shared her knowledge with other women and has taught at least one other woman to do her work when she is absent from the village. We have not found this happening in the villages under the government system. As already noted the Jamkhed villagers showed initiative while the Pathardi villagers were mostly waiting for the government to do things for them. This is due to the
differences in the level of involvement of adopters in all the stages of knowledge utilization in the two systems.

**Hypothesis Nine**

Incremental innovations are more easily adopted than preventive innovations (Zaltman, 1979: 89).

Giving medicine is an incremental innovation, while immunization is a preventive innovation. The government health care system has advocated that both curative and preventive care should be provided. While curative care is available in the primary health centers and the sub-centers and through the health guides, greater emphasis is placed on family planning. Family planning has the highest priority in the government system. This is nothing bad considering the enormity of the population problem for India. However the government facilities come to be recognized as family planning centers with some curative care while the rest of the preventive aspects are given very little attention. Lack of safe drinking water is one of the major problems leading to many gastro-intestinal diseases. Inadequate village sanitation also contributes to spread of diseases. But the government health care system can do very little in these areas as these are not part of its responsibilities. The sanitation inspectors, health workers and health guides "advise" the people to keep the village clean and to boil water before drinking etc. Merely telling people does not lead to improvement in these conditions. We noticed a dirty water puddle breeding mosquitoes and flies right in front of the house of a sanitary inspector. Government workers tell us that people do not listen to them.
The situation in the Jamkhed project villages is very much different. Helping to dig shosh khadda (soak pits) outside every house is one of the major tasks of the village health workers, mother's clubs and farmers' clubs. Through constant advice and demonstration most village homes drain their waste water into soak pits in these villages. However, we did observe that in one of the villages, a lot of waste water was flowing through the streets. We were told that there were two political factions in the village each trying to undo the other's work. Thus sometimes the village social structure undermines simple development tasks. In this village the president of the young farmers' club was the son of the sarpanch himself leading to concentration of power in one family. Otherwise this village has gained a lot from the project activities. Probably more could have been achieved with greater co-operation among all the villagers.

We would attribute the greater success of the Jamkhed project in rural development to the integration of curative and preventive aspects of health care with other development problems. The Project actively promotes family planning through contraception, birth spacing, and sterilization. These programs are well accepted by the villagers since they have confidence that their children are in good health and will survive due to the reliable and affordable curative and preventive care provided by the Project. The Project has promoted afforestation programs, contour bunding, building small irrigation dams, animal husbandry and cottage industries often getting the funds from government sources. These are, what we may call, the promotive
aspects of rural development. If the Project was only providing preventive care there might have been less acceptance by the villagers. Reliable and affordable curative care is very important to gain the confidence of the people. However curative care alone will not foster rural development as preventive and promotive innovations are necessary to sustain it.

Thus the greater success of the Jamkhed project is explained by its integration of curative, preventive and promotive innovations in health care and rural development. The government health care system is basically interested in curative and preventive care. Its promotive innovations are limited to family planning programs. Other government agencies handle rural development activities.

**Hypothesis Ten**

Innovations differentiated for target groups among adopters will be more easily adopted than undifferentiated innovations where adopters form distinct classes or groups (Zaltman, 1979: 90).

Proper identification of target groups among adopters will lead to a greater degree of adoption since programs can be developed with more specific content. The government system has a number of programs for specific target groups such as leprosy patients, TB patients, pregnant women and children. These programs are well designed but the success depends on the change agents who are to implement them. Very often these groups are also made up of the poor and disadvantaged in rural areas. So unless special effort is made to reach them there will be poor response. If the health guide is male, he is less likely
to be very successful in maternal and child health. If a large number of TB patients are harijans, a health guide belonging to an upper caste may not be very persistent in follow-up which is very crucial for recovery in this case. Thus while the government has programs for target groups they are not able to differentiate these target groups into specific groups based on other socio-economic characteristics crucial for successful adoption.

The Jamkhed project has made deliberate efforts to tailor its programs to specific target groups within the rural community. In order to reach the women and children first and foremost the project leaders have insisted on having only women as health workers. This has proved to be a major aspect of its success. To solve the problem of harijans not being allowed to draw water from common wells, the project directors have tried to dig the well, wherever possible, in the harijan wada of the village. This has not only enabled the harijans to have access to water, but also broken down the caste barriers by making the upper castes go to the harijan wada to draw water. The selection of harijan women as health workers and their gradual success in making significant contributions to village health has also brought about social change. The mother's club support and continue the work of the health worker. In some instances women have organized against husbands who spend all their earnings on alcohol. The men in the village, who are mostly farmers, are organized into farmers' clubs to involve them in the development of their village. Thus promoting innovations for specific target groups has contributed to the greater impact of the Jamkhed project on rural development.
Hypothesis Eleven

Projects where channels of communication are established by change agents which provide an efficient two-way flow of information and particularly including feedback channels are more effective than projects with one-way channels of communication (Arensberg and Niehoff, 1971: 174).

From our account so far it is evident that the government system has by and large a one-way communication channel. Problem identification, problem definition, problem translation and program formulation are done at the national, state or district levels and handed down to the block levels for implementation and adoption. There is very little input from the grassroots levels despite lip service being paid to people's participation. The health guides and health workers who are immediately in touch with the adopters do meet with the doctors and other staff at the primary health center. But this is mainly to disburse honoraria and distribute medicines.

As far as two-way communication between the adopters and the change agency is concerned there are very limited channels available. One of them is in the selection of the health guide. We have noted how this is confined to the power elite of the village. There is no discussion on health problems and possible solutions between the villagers and the government health care system. Programs are formulated and implemented through the change agents such as health guides. The adopters' input is hardly sought or obtained.

The Jamkhed Project has maintained a very effective two-way channel of communication between the adopters and the change agency
right from the beginning. In all stages of knowledge utilization the input of the adopter communities have been sought and obtained. The nurse-instructor of the project, who is in charge of the mobile team and of training the village health workers, told us how she had to first sit down and make a dictionary of local words and idioms to understand and communicate with the women even though she is a native Marathi speaker. This is an aspect often forgotten by change agents, especially those from outside the region. Even though they may all be speaking the same generic language there is much diversity in local dialects. A change agent from another region or from the city fails to communicate effectively with villagers without the proper knowledge of the local dialect. This is also one of the reasons for the success of the local women as village health workers. The Project maintains regular two-way communication with the adopters through the village health workers, the mobile team, the mother's clubs, and the young farmers' clubs.

The Project also maintains detailed records of its activities and conducts periodic internal as well as external evaluations of its work. While the government system abounds in memos, the project leaders have maintained a face-to-face communication style through the daily morning prayer meetings for all staff and visitors and weekly training sessions for the village health workers. The various demonstrations of intermediate technology such as windmill, solar heater, cheap and efficient huts, silk screen printing and exhibition of its work at the main center at Jamkhed also communicate eloquently with visitors and adopters alike. The village health workers use
locally designed flash cards to educate the villagers about various aspects of health care. When it was found that these hard board flash cards were getting damaged in rain, the project staff began to make flash cards by screen printing on used oil cans. These have proven to be sturdy and weather resistant. These flash cards are designed by a local artist using local concepts and idioms.

In contrast the government hospitals have only a few posters supplied by pharmaceutical companies or designed at the national or state level and mass produced. The trademark of government health centers is the red triangle with the accompanying slogan: "Small Family, Happy Family" which is the symbol of family planning in India. Primary health centers also exhibit graphs and charts of its annual achievement in various activities such as sterilizations, immunizations, patients treated etc. To most villagers who are illiterate these exhibits mean very little if anything. The health guides do not have any flash cards to use in communicating with the illiterate villagers. The district health care system does have many short films on family planning and diseases which are shown all over the district. The doctors admitted though that villagers do not come if no feature films are shown along with these educational films.

Thus while the government system uses largely a one-way, mass media style of communication with centrally produced messages, the Jamkhed project uses a more interpersonal style of communication with locally produced messages. Therefore the use of interpersonal and local media and messages for communication is largely responsible for the greater impact of the Jamkhed project on rural development.
G: Conclusion

We have concluded by checking each of our eleven hypotheses that the Jamkhed project has greater impact on rural development than the government health care system because it is more coherent as a knowledge utilization system. We are not denying the fact that the Jamkhed project is active only in a selected area and that it is involved in much more than health care. However the government also has other departments to deal with problems which are closely related to health such as safe drinking water, non-formal education, nutrition programs, village sanitation and agricultural development. We are not placing the blame of lack of rural development only on the government health care system, rather our attempt is to show that in order to be effective health care programs have to be as comprehensive and coherent as the Jamkhed Project.
Notes to Chapter VII

1. The data presented on the Pathardi taluka are from 1975 whereas data from the Comprehensive Rural Health Project (CRHP), Jamkhed are of 1982. The seven year difference may raise some questions about the comparability of the two sets of data. However, in the absence of more recent data available from the government health care system we have no other choice. But data from the control villages and of CRHP were gathered simultaneously in 1982. The significant difference in these two sets of data should give us an indication that the situation in the villages under the government system is not as good as in the CRHP villages in terms of health indicators.

2. Some of these women were very eager to sing these songs for us. Some of the health guides in the government system, trained at Jamkhed, also sang a number of these songs for us to record. They were very thrilled to hear themselves played back. Appendix G presents one of these songs which was written by a villager and composed by a local singer.
Chapter VIII

SUMMARY OF FINDINGS AND CONCLUSIONS

In order to evaluate the objectives of this study, in this chapter we shall first check how far they have been achieved. Then we shall summarise the findings of the study and draw conclusions based on them. These conclusions are policy relevant as the study is related to planned social change and hence can be considered as recommendations. This study had two main objectives, viz., (i) integration of various theories in the study of planned social change and (ii) integration of various methodologies in collection and analysis of quantitative and qualitative data at macro and micro levels.

A: Theoretical Integration

In Chapter II we surveyed the various theoretical approaches to the study of social change. We noted that these theories essentially stem from two orientations, viz., one derived from the formulations of Marx and the other from Weber. While both have contributed a great deal to the understanding of social change in the last two centuries and especially in the twentieth century the social policies which were formulated based on these theoretical orientations have not been very successful in promoting planned social change. Marxian principles suffered in their application from over-centralization of power leading to coercion while the "modernization" paradigm failed due to
its inability to predict outcomes since the so-called "developing" countries do not necessarily imitate the developed ones.

We have also noted that the various theories which have been formulated within these orientations are also not quite useful to the study of planned social change at the micro-levels. World systems theory or theories of dependency are useful in understanding the pattern of development and underdevelopment at the level of a large scale society. Modernization and diffusion of innovation theories were discredited largely due to the criticisms offered by the dependency theories even though historical factors such as decolonization of nations in Africa, Asia and Latin America and the subsequent rise in nationalism are equally responsible for the rejection of "western" theories. While none of the above theories is completely acceptable now, we cannot ignore their contribution to the understanding of social change in developing countries. Therefore we have attempted to integrate these theories into a more neutral paradigm, known as the "knowledge utilization perspective."

This perspective has been proposed first by Havelock (1969) and then refined by others (Clark and Guba, 1975; Meehan and Beal, 1977; Zaltman, 1979; Dissanayake, 1982). We have adapted the "general model" of knowledge production and utilization proposed by Meehan and Beal (1977) for this study. Meehan and Beal's general model is more useful to the study of knowledge utilization in the development of a product rather than a program. Our interest is in the study of health care organizations in India and how their knowledge utilization
systems function in program formulation and implementation. We have used the terminologies prevalent in policy planning literature to make it more accessible to policy makers, planners and change agents.

We also noted that not many studies have been undertaken using the knowledge utilization perspective and much less any study of organizations on a comparative basis. Knowledge utilization is a completely new perspective in the social science literature of India. There are not many indigenous perspectives on the study of social change in India and we feel that development of a new perspective to the study of social change would be very useful. Therefore we undertook a comparative study of two health care organizations in India using a revised six stage model of knowledge utilization. Since our perspective is an integration of the various theories of development and underdevelopment, we first did a historical analysis of the health care system in India as a knowledge utilization system, following the orientation of dependencia and world systems perspectives. Such an analysis facilitated the study of organizations as knowledge utilization systems by placing them in the historical and cultural context of India as a developing country. Using concepts from the diffusion of innovations and development communication theories we analyzed the two organizations on a comparative basis as knowledge utilization systems. Thus we have attempted to link macro and micro level theories to the analysis of planned social change in India.
B: Methodological Integration

Literature on development emphasizes the need for historical and comparative analysis. This calls for historical as well as comparative data. In our study we have presented a comparative picture of the health status of India in relation to other countries in South Asia and some selected countries which have been held up as examples of successful health care programs such as China and Cuba or advanced western countries to understand what development or underdevelopment means to India. We have also presented historical data on India to check whether India has been "underdeveloping" or "developing" in the area of health. Again we have presented data on various states of India to point out that concepts such as "center and periphery" are applicable within the country itself.

A second level of methodological integration involved using quantitative and qualitative data. Modernization and diffusion of innovation studies largely depended on quantitative survey data while dependency theories used mainly qualitative historical data. Lack of quantitative analysis has been recognized as a weakness of the dependency theories and a number of scholars have recently attempted quantitative analysis of development indicators on a comparative basis (Chase-Dunn, 1975; Rubinson, 1976; Koo, 1981; Sullivan, 1983). While both these approaches are useful they also remained partially inadequate. Therefore we have tried to integrate quantitative data with qualitative data in our analysis. We used a case study approach for studying the organizations using interviewing as a major method of data collection. This was also necessary in the light of the
 antagonism created by western survey researchers who had insisted on interviewing persons on their selected sample without proper consideration for the social structure of this area. This further points towards the social responsibility of the researchers to the problems they study. People see very little justification for sparing their time for an academic exercise conducted by a group of foreign or urban elites while their problems remain unsolved. Thus studies to test fancy research methods without immediate policy relevance are becoming difficult in rural areas of developing countries.

Qualitative data are probably easier to collect but immensely more difficult to analyse and to draw conclusions. Therefore this study also necessitated developing ways and means to analyse data obtained through interviews. Chapter III has documented these efforts. After this exercise has been undertaken it seems that there may have been more efficient ways of obtaining and documenting qualitative data. If there is need to undertake similar studies this experience would prove invaluable to this researcher. The value of this exercise is immense as a learning experience in the absence of ready-made manuals to go by.

C: Summary of Findings

The major hypothesis of this study has been that, as knowledge utilization systems, the voluntary organization we studied was more effective in rural development than the government rural health care delivery system. A number of variables pointed out that this was indeed the case. We shall briefly summarise them here. We found that
infant mortality rates in the villages under the Jamkhed Project have dropped from a high 180 in 1971 when the project was started to 41 in 1982 while the national average is 122 per 1000 in 1981 and it is reported to be 67 in 1975 in the Pathardi taluka which we studied as the government system. More dramatic achievements have been made in the case of immunizations from a mere one percent in 1971 to 98 percent in 1981, reduction of malnutrition from 30 percent to 6 percent, antenatal care from 0.5 percent to 98 percent and deliveries conducted by trained staff going up from one percent to 95 percent in the Jamkhed project.

There are a number of other variables on which the Jamkhed project has shown great improvement. Chapter VII has summarised these. To recapitualte them briefly here, sanitation in the Jamkhed villages is far better than in Pathardi villages, which is something noticeable only to a participant observer. Most houses in the Jamkhed villages had built soak pits to drain dirty water from kitchens which was not the case in Pathardi taluka where one could see dirty water puddles on many village streets. One of the main reasons for this situation is the participation of the villagers in the development of their own village. The Jamkhed villagers showed more sense of participation mainly through their involvement in the selection of the village health worker and through the activities of the Young Farmers' Clubs and the Mothers' Clubs. These organizations helped each other in the various activities initiated with the help of the project. No such organizations are active in the Pathardi villages. Even where some village organizations are active, such as in the organization of
the Eye Camp at Kharvandi village the response of the government system is far from exemplary in that the doctors reach it many hours late when most villagers who need care have left after waiting for several hours. The government doctors have valid excuses for their delay such as lack of vehicles in running condition. But it also points out the inefficiency of the system and the respect it has for the convenience of the people. There seems to be a "take it or leave it" attitude in the government since the services are provided free of cost.

This leads us to the next point about the question of cost effectiveness of the project vis a vis the government system. The government sources agree that they do not have enough finances to meet all the requirements of medicines, vehicles and personnel. It is true that the Jamkhed project was set up with donations from international organizations and that donations are still received. However, the Project has also shown that its hospital, mobile team, and village health workers are self-supporting through fees collected for services rendered even while poor beneficiaries are charged very little or nothing at all. The principle that those who can afford should be and usually are willing to pay a reasonable cost for medical care should be taken into serious consideration by the government.

The effectiveness of the Jamkhed Project is also due to its programs for income generation such as animal husbandry, agriculture, and cottage industries. These have been organized under the auspices of the Farmers' Clubs and Mothers' Clubs. These organizations have contributed much to the sense of participation by the villagers in the
project activities in health care. The Project directors had identified the exploitation of women as a major problem in villages. Therefore they have encouraged organizing women to fight for their rights and dignity. Some Mothers' Clubs have acted against drunken spouses, a common feature of rural India. Women also have come forward to have smaller families even after having only daughters in some cases, which would have been quite unthinkable in traditional households where male progeny are preferred and where husbands and mothers-in-law decide family size.

Based on these observations, and the general consensus among researchers who have studied the Jamkhed Project, (Gwatkin, Wilcox and Wray, 1980; Faruqee and Johnson, 1982; Chakravorthy, 1983; Malgavkar, 1983; Hardiman, 1984) we have concluded that this Project has been more successful in promoting rural development than the government system.

D: Conclusions

Having summarised the findings of the study, we shall now look at the propositions we have advanced to explain these differences and then draw conclusions that have policy implications.

1. Coherence among Stages of Knowledge Utilization: The major reason for the overall success of the Jamkhed Project is the coherence among stages of knowledge utilization. The project leaders themselves were responsible for problem identification, definition and specification and program formulation, implementation and evaluation. Such coherence is hard to achieve in the government system since each
has involved the people to a substantial degree right from problem identification onwards. The villagers have to be involved right from the beginning since the Project agrees to start its activities in a village only upon invitation with promise to provide certain facilities. The ethos in these two systems is represented in the following set of remarks by villagers. To a question about the unsanitary condition of the village, a village sarpanch in Pathardi taluka said almost in exasperation: "Government says it will give, but never gives." He was referring to cement to build latrines and gutters in the village. In contrast a village leader in Jamkhed Project area told us: "We can manage now even if the Project does not help." Thus a sense of self-sufficiency has been noticed in the Jamkhed villages as a result of the Project activities. This also points to the fact that often what people need is an initial push into doing things their own way than doing things for them.

2. Deliberate Social Change: The Jamkhed Project directors do not hide the fact that they used their knowledge of the social structure of the region to make deliberate attempt to alter it. They realized that trying to work within a closed social system is like pouring water over a pot kept upside down. This approach is not new as the radical social change perspectives derived from Marxian social analysis dictates the destruction of existing social structures to bring about socialism. But this is not what the Project directors had in mind. They wanted to reach the poor and disadvantaged without violence and hatred. According to them often radical movements stir up the existing social structure and then exit from the scene exposing
in mind. They wanted to reach the poor and disadvantaged without violence and hatred. According to them often radical movements stir up the existing social structure and then exit from the scene exposing the villagers to greater oppression later. Therefore the Project used ingenious ways to reach the poor and disadvantaged first and foremost. We have documented a number of examples of their successful ways especially the digging of wells in the Harijan locality whenever possible, recruitment of only women as health workers, and training health workers of all castes by having them to live and learn together.

Such examples are not available in the government system where the doctors and para-medics do their duty of health care delivery and have no time or mandate to try and change the social structure. They also work through the established rural leadership where they have to obtain people's participation more as a token than for bringing about radical changes. They plead their lack of power to influence the people as the reason for their ineffectiveness in bringing about overall change.

3. Leadership Styles: One of the major differences between the government system and the Jamkhed Project is the kind of leadership styles employed by these two organizations. We can talk of these as different kinds of management styles as well. In the government system, rules and regulations are laid down from above, duties are assigned and everyone is expected to follow them. We characterized this as the classical "bureaucratic leadership" style as elaborated by Weber. Following the Weberian logic then, such an organization with a bureaucratic structure should be more efficient than an organization
with a charismatic leadership style having less rules, regulations and division of labor. We identified the Jamkhed Project to be of the second category. Our findings show that the Jamkhed Project is more effective in achieving overall rural development. We explained this apparent contradiction to the Weberian logic by arguing that where problems are still due to the traditional social structure, a traditional approach is more likely to succeed than a bureaucratic one. Such is the case in rural India where problems of health care are immediately related to poverty, illiteracy, and subjugation of women and harijans. Therefore a charismatic couple like the Aroles using a traditional style of management, despite advanced western training, has succeeded better than the almost "faceless" government system.

The immense dedication of the leaders and staff of the Jamkhed Project cannot be discounted either. We found the government workers also to be conscientious and dedicated about their work to some extent. The difference seems to be in the basic philosophy. While the government people felt that they were doing a free service, the Jamkhed Project directors and staff gave the impression that they were trying to help the villagers look after their own health. One stresses the aspect of "delivering" health while the other emphasized "taking care" of one's health. David Werner, who has done successful work among highland people of Mexico, has emphasized this difference as the key to the success of the projects he helped to establish (Werner, 1981; Chatterjee, 1982). An "alternative strategy for health for all" proposed by the joint committee of the Indian Council of Social Science Research and the Indian Council of Medical Research
(1981) has also emphasized this aspect. However, this "alternative strategy" has been criticized as "treating the symptoms" typical of the government approach to health care delivery in so far as this committee also proposed setting up of more health care facilities to solve the problem of health (Banerji, 1981). There is a point here that setting up more and more facilities itself will not improve health conditions unless those who deliver the services take it upon themselves to learn from the people about the nature of the problems and get them to take care of their own health. It is more easily said than done, though the example of the Jamkhed Project shows that it can be done. There are also a number of other voluntary organizations which have been successful to some degree in this regard though data on these are not fully available due to lack of full scale studies on these.

A conclusion that can be drawn here is that it takes much more than planned programs to promote health care. It has to become a people's movement. For this, committed leaders are essential to harness the energies of the people. Government bureaucrats are often not trained nor suited to play this role. The voluntary sector seems to be the alternative. This realization seems to have been behind the decision of the government to allow $20 million USAID funds for encouraging voluntary organizations to start rural health care programs (India Abroad, 1983). The recognition that leaders like the Aroles are getting now is also a good sign. For a long time there used to be political suspicion with the work of anyone who was trained abroad or of those who received any foreign donations. This is not to
suggest that no rural development work can be done without foreign grants, rather that voluntary organizations with accountability are better suited to rural development efforts. It is to be recognized, however, that the government will still have to cater to the vast rural populations who would not be served by voluntary organizations, such as the Jamkhed project which cannot be simple replicated. Some of the ideas can be adopted to other regions as in the case of the government's health guides scheme with "emphasis on women as health guides."

4. Change Agent Homophily and Credibility: One of the most important findings of this study is that homophily with and credibility among adopters are the most crucial aspects of change agent effectiveness. We have noted that this has been first suggested by Rogers (1973) about the traditional midwife as a change agent. We have found this to be true in the case of the village health workers of Jamkhed and the health guides of the government. Despite their training and willingness to serve in rural areas even if it is for a short period, government doctors find it difficult to be fully effective. A government doctor reflected on the reasons for this:

In the beginning [this is] what happens, we have knowledge, but we have no patience. For treating patients we have to have patience. Maturity comes after working a few years in rural areas. Our community health volunteer [health guide] is a good scheme. They are a bridge between the people and the health worker [in charge of health guides]. Before this scheme there was no communication between people and health workers. CHVs are of the village. So we know our man is there. So we can contact local people easily and we can implement our schemes. And we can wait there, because the people know us, and that this is a doctor, this is a nurse etc. So that is again very good. (PSG: Dr. Ashok V. N., 28, Medical Officer, PHC)
This doctor also told us how education in medical colleges, invariably located in urban areas, offers inadequate preparation for work in rural areas. Medical students do not know the rural conditions and how to cope with them. They do not know the rural social structure and the constraints of rural life. Most often doctors posted in rural areas are waiting to get back to cities after finishing their rural posting. This also reflects the elite character of the medical profession in India. Even the "barefoot" doctors trained for working in rural areas by the West Bengal government were found to be migrating to the cities (Hindustan Times, 1984a).

It is not only the doctors who are not willing to stay on in the villages but even nurses and auxiliary-nurse-midwives find excuses to migrate to cities as was found out by the Aroles in the beginning. Thus all the persons with competence credibility due to their training more often than not lack homophily since they are not eager to identify themselves with rural life or are outsiders who need a few years to be accepted into the rural social structure.

This is where the village women trained as health workers have proven to be successful. They have homophily with the adopters being from the same social milieu and less likely to migrate unless they are unmarried at the time of selection as health workers. They have safety credibility with the adopters since they know their clients rather closely and can learn things through informal village networks inaccessible to outsiders such as nurses and ANMs. Only their competence credibility is suspect, at least in the beginning. This has been enhanced through constant on-the-job training and support by
the mobile health team and project staff of the Jamkhed Project. It is also important to note that female health workers are more homophilous with the village women who should be the primary target of health care programs in rural India than are male workers. The government's community health volunteer (CHV) scheme suffered because this point was not given adequate consideration, with the result that most of the early CHVs were men (Maru, 1983). Only recently has there been a move towards encouraging women to be the health guides (Ministry of Health and Family Welfare, 1983). Some encouraging results are already evident in this regard in the Pathardi taluka where women health guides have been recruited and trained at the Jamkhed Project. The government doctors concur that indeed female health guides are more effective than male health guides. This is something the government can build on. Waiting to appoint both a male and a female health guide for every village may take too long a time to bring about urgent changes in rural health care needs. Instead the emphasis could be shifted to first of all selecting and training female health guides for all villages.

5. Communication Style: This is another important dimension of our inquiry. We hypothesized that the Jamkhed project was successful because it borrowed ideas from the people themselves. In fact the most important idea, i.e., of selecting a village woman to be trained as a health worker, originated from the villagers themselves. The Project directors were willing to listen to them and take up their suggestion as a challenge. We have discussed in detail how this became the turning point in the effectiveness of the Project. In this
context what activists of the Bhoomi Sena Movement had to say about outside help is very important:

Q: In what sense do you think that outside help is useful?

A: We need outside help for analysis and understanding of our situation and experience, but not for telling us what we should do. An outsider who comes with ready-made solutions and advice is worse than useless. He must first understand from us what our questions are, and help us articulate the questions better, and then help us find solutions. Outsiders also have to change. He alone is friend who helps us to think about our problems on our own (Development: Seeds of Change: 1984: 47).

Thus the willingness to learn from the villagers and help them to help themselves involves a constant two-way communication. This is what Freire's conscientization method entails (Freire, 1972).

Unfortunately the government system has no mechanism for establishing such dialogical context in its work. When pressed about some problem the doctors often answer, "We have no power to influence people."

This is the result of the "social engineering" models of social change which originated from the modernization and diffusion of innovations paradigms. One can hardly find in the government system an attitude that to be effective change agents and health workers themselves have to change.

Another important aspect of the success of the Jamkhed Project has been use of indigenous communication media such as songs, dramas, puppet plays, magicians etc. Every form of traditional media can be successfully adopted to establish communication links with the villagers. Some innovative attempts by the Satellite Instructional Television Experiment have shown that it can be done even through
technologically advanced media (Agrawal, 1981). The colorful flash
cards developed and screen printed on used oil cans by the Jamkhed
Project for health education bear testimony to the fact of local
ingenuity in such matters. In contrast the government mass produces
publicity materials for health education. These printed materials are
less effective in a society which is over seventy percent rural and
also illiterate.

The village health workers have been successful also because they
belong to the same villages. Even though India is divided into
linguistic states there is immense variation in spoken language even
within a small region which is difficult for an outsider to master in
a short while. Also the fear that village health workers or health
guides will become quacks is unwarranted because it has not happened
in the Jamkhed Project. Nor should it happen in other areas if there
is proper accountability and regular evaluation systems are
established.

6. People's Participation in Rural Development: This is the last
but no means the least aspect to be considered in this study. We
defined development as "enhancing self esteem and a sense of self
efficacy or ability to make choices about the future" (Goulet, 1971).
This encompasses the importance of people's participation in
development efforts. We also noted the tendency to pay lip service to
people's participation at all levels of government and international
development forums. In fact it is one of the most misused terms along
with "development." We have pointed out that often people's
participation, which is one of the professed objectives in the
government health care system, is limited to a few leaders in the traditional rural structure such as the sarpanch and members of the panchayat samiti. This is understandable since the government system is basically concerned with providing curative services and promotion of family planning. The present organizational structure is focussed on these priorities.

As we know the introduction of health guides is a recent phenomenon and its impact is yet to be widely felt. The health guide is also becoming one more family planning promoter in the government system as can be gathered from the opinion of the doctors and para-medics. Though it probably could not have been avoided, the community health volunteer scheme was a top-down scheme announced in a hurry by the Janata government in 1977 even though it had been under consideration for sometime. People are supposed to participate in the selection of these volunteers with very little actual participation. Considerations such as reaching the poor, the harijans or the women and children first, are not given adequate attention as was the case in the Jamkhed project. This is why we hypothesized that innovations differentiated for target groups among adopters will be more easily adopted than undifferentiated innovations where clients form different groups or classes. The village health workers of Jamkhed have been effective because they were selected with proper attention paid to their being middle-aged, female, with children, having undergone sterilization, chosen by the villagers, someone with a willingness to serve all people irrespective of caste, and not merely a relative of the sarpanch or village school teacher.
The experiences of the Jamkhed Project also highlight how "one can't solve rural health problems from a planning room in New York" (Alderman, 1974). We can paraphrase it as "one can't solve rural health problems from a planning room in the Ministry of Health and Family Welfare in New Delhi or at the Sachivalaya in Bombay." Dr. Raj Arole speaks of his experiences in Jamkhed as an instance of how community health can be used as a tool for people's organizations (1981). There has been much attention recently paid to this aspect of building people's organizations as essential to rural development (Wignaraja, 1984; Haque, 1981; Sheth, 1984). We must recognize that this is different from establishing voluntary organizations in rural areas. Very often these organizations are established not for the people whom they are supposed to serve but for the founders to hold titles and arrange foreign tours. These are not people's organizations but are for organization people.

We shall conclude this discussion with the suggestion of a woman village health worker as to what she had to tell international donors and voluntary organizations about strategy for rural development:

If you want to bring about development, treat us as equals. Don't think that only you have knowledge. When you want to go into a village, go to every family in the village, as doctor Arole did before starting the project.
Appendix A

GLOSSARY OF LOCAL TERMS AND ABBREVIATIONS

ANM: Auxiliary-Nurse-Midwife
Apsaras: Angelic beings depicted with female attributes
Ayurveda: Traditional system of Indian medicine
Balwadi: Creche for children
BDO: Block Development Officer - Government Officer in charge of the block
Block: Administrative regions for development activities usually contiguous with the revenue region--taluka
Brahmin: Upper-most caste person in the fourfold caste structure of India
Chappathi: Thin unleavened wheat bread baked on a hotplate. Also known as roti
CRHP: Comprehensive Rural Health Project, Jamkhed
Dai: Traditional birth attendant or midwife - a hereditary occupation in rural India
Dev-rishi: Medicine man
District: Basic administrative unit in a state for revenue and law enforcement purposes headed by a district collector, a member of the elite Indian Administrative Services
Harijan: Former untouchable; Mahatma Gandhi gave them the name 'Harijans' - children of God
Harijan Wada: The area where harijans live. Harijans are usually settled in a separate and often fringe area of the village
Khada: Left-over water after washing rice
Laparactomy: Method of birth prevention in women by tying the fallopian tubes as against cutting them as in done in tubectomy
Mahila Mandal: Women's club

Maratha: A warrior caste in Maharashtra ranked between Brahmin and Harijans

ORT: Lemon juice with sugar and salt given to dysentery patients known as Oral rehydration therapy (ORT) recommended by WHO

Panchayat: The council, generally in reference to the village

PHC: Primary Health Center, the basic health delivery unit at the taluka level till now for a population of every 100,000 but planned to be one for every 30,000 people

Police Patil: A government functionary in the village who is empowered to maintain law and order; also known as police patel

RHC: Rural Health Center, a health delivery unit usually in a small village where a doctor visits daily for a few hours but has a resident auxiliary nurse midwife

Roti: Homemade coarse flat bread is the basic food of the villagers irrespective of whether made out of wheat, bajra, barley, maize or jowar flour

Rupee: The basic Indian currency valued about US $0.08 (May 1985)

Sa'lab, Sahib: A respectful term used by villagers to address any government official or outsider

Sachivalaya: The government secretariat of the Maharashtra State located at Bombay where administrative decisions are made

Sarpanch: The president of the village panchayat

Siddha: An indigenous system of medicine

SC: Scheduled caste; the former untouchables also known as 'Harijans' now, are listed in a special schedule in the Indian Constitution for purposes of granting special privileges such as job reservation

ST: Scheduled Tribe; listed in a separate schedule in the Indian Constitution for granting special privileges similar to the scheduled castes

ST Bus: State Transport bus, usually the only public mode of transportation available to remote villages

Shosh Khadda: Soak pit built near the house to drain waste water as villages and even small towns lack any drainage system
Talati: Village revenue records keeper, a government employee

Taluka: The basic revenue collection unit below the district; also known as tehsil

Tehsildar: Head of the tehsil or taluka

TB: Tuberculosis Baccillus

TT: Tetanus Toxoid

TCL: Bleaching powder used to purify drinking water

Tubectomy: A birth prevention method where a woman's fallopian tubes are cut to prevent ovum to pass to uterus.

Triple antigen: Vaccination given to children to prevent measles, diphtheria and whooping cough

Unani: An indigenous system of medicine

Yoga: A system of mental and physical discipline developed in India and presently more popular in the west.

Zilla Parishad: The Council of elected members which governs all the developmental activities of the government at the district level including health.
Appendix B

LIST OF VOLUNTARY ORGANIZATIONS WHICH PROVIDED SECONDARY DATA ON THEIR ACTIVITIES

1. The Sanchalak, Sevamandal Meghraj, Kasana P. O., Sabarkantha District, Gujarat.

2. Mr. Arun Chavan, Honorary Secretary, Verala Irrigation and Development Project Society, Laxmi Nivas, Ambarai Road, Sangli 41616, Maharashtra.

3. Mr. D. N. Banerjee, Honorary General Secretary, Mandra Unnayan Samsad, Mandra P. O., Hoogly District, West Bengal.

4. Dr. M. Christian, Scheffler Leprosy Research and Teaching Centre, Karigiri, S.L.R. Sanatorium P. O., 632106, Tamil Nadu.

5. Executive Director, Caritas India, CBCI Centre, Ashok Place, New Delhi 110001.


7. Dr. Arun Bai, Convener, Medical Committee, Yusuf Meherally Centre, National House, 6 Tulloch Road, Appolibounder, Bombay 400039, Maharashtra.

8. Swami Vandananda, General Secretary, Ramakrishna Mission, Belur Math, Howrah, West Bengal.

9. The Director, Health O'Million, Archbishop's House, Trivandrum 6950001, Kerala.

10. Miss A. Mathew, General Secretary, YWCA, Bangla Sahib Road, New Delhi 110001.

11. Mr. Terence Kirch, Program Director, Catholic Relief Services, 3353 C. Box 3534, New Delhi 110024.

12. Dr. S. N. Burman, Secretary, Silchar Samaj Kalyan Samiti, Park Post, Silchar 796001, Assam.

13. Dr. R. C. Mitra, Director, BAM India, J 483 Pharpur Road, Garden Reach, Calcutta 700024, West Bengal.

14. Dr. S. Kasthuri Devi, Medical Superintendent, Gandhigram Trust, Madurai, P. O. 624309, Tamil Nadu.
15. Ms. Susheela Hippardi, Librarian, India Development Service (I), 98/2 Kelgerio Road, Dharwad 580008, Karnataka.

16. Smt. Kunthi Sondhi, Secretary General, All India Women's Conference, N-17 Panchsheel Park, New Delhi 110017.

17. Mr. N. V. Ramana Murthy, Project Administrator, The Bhagavatla Charitable Trust, Origantvarai Street, Yellamchili 531055, Andhra Pradesh.

18. Dr. S. A. Kabir, Executive Director, Nutrition Rehabilitation Centre, Government Rajaji Hospital, Madurai-20, Tamil Nadu.

19. Fr. Thomas Malayampuram S. J., Exectutive Director, Tirunelveli Social Service Society, Palayamkottai 627002, Tamil Nadu.

20. Executive Director, Kottar Social Service Society, Bishop's House, Nagercoil, 629001, Tamil Nadu.

21. Mr. Issac P. Mann, Public Relations Officer, Church's Auxiliary for Social Action, Rachana Building, 2 Rajendra Place, Pusa Road, New Delhi 110008.

22. Mrs. Annakutty Roech, Organising Secretary, Hindu Kusht Nivar Sangh, 1 Red Cross Road, New Delhi 110017.


24. Mr. Rajive Jain, Centre for Development of Industrial Technology, D 1 Soami Nagar, New Delhi 110007.


26. Mr. Santosh, Secretary, Kasturba Gandhi National Memorial Trust Kashturbagram, Indore 452020, Madhya Pradesh.

27. Mrs. B. V. Choudhrie, Padhar Hospital, Padhar P. O., Betul District, Madhya Pradesh.

28. Dr. V. S. Lall, The National Council of YMCA's in India, Bharat Yuvak Bhavan, New Delhi 110001.
LIST OF PEOPLE INTERVIEWED IN THE GOVERNMENT HEALTH CARE SYSTEM

BY NAME, DESIGNATION, PLACE, AND DAY AND DATE OF INTERVIEW

I: Government Officers

1. Mr. T. P. Shinde, Block Development Officer, Pathardi; Taluka Civil Hospital, Pathardi; Tuesday, 11/23/82
2. Mr. V. K. Gaikwad, Tahsildar, Pathardi; Friday, 11/26/84
3. Dr. P. V. Bhatlawande, District Health Officer, Ahmednagar; Friday, 11/18/82 and Thursday, 1/6/83
4. Dr. A. B. Harke, Chief Medical Officer, Primary Health Center, Tisgaon; Thursday, 11/25/82
5. Dr. A. N. Nayakwadi, Medical Officer, Primary Health Center, Tisgaon; Thursday, 11/25/82
6. Dr. B. S. Wagh, Medical Officer, Taluka Civil Hospital, Pathardi; Tuesday, 11/23/82

II: Paramedics

7. Mr. N. G. Patel, Coordinator, Primary Health Center, Tisgaon; Eye Camp, Kharvandi; Saturday, 11/20/82
8. Mr. M. Rasne, Vaccinator, Kharvandi; Eye Camp; Saturday, 11/20/82
9. Mr. N. L. Damale, Sanitary Inspector, Yeli; Eye Camp, Saturday, 11/20/82
10. Smt. M. J. Udbate, Auxiliary Nurse Midwife, Manguswadi; Eye Camp, Saturday, 11/20/82
11. Mr. N. G. Gola, Sanitary Inspector; Taluka Civil Hospital, Pathardi; Rural Health Center, Paghor-Pimpalgaon; Monday, 11/22/82
12. Smt. A. B. Kharat, Auxiliary Nurse Midwife, Rural Health Center, Paghori Pimpalgaon; Monday, 11/22/83
13. Smt. V. V. Shinde, Sweeper, Rural Health Center, Paghori-Pimpalgaon; Monday, 11/22/82
14. Mr. B. S. Pataskar, Leprosy Technician, Taluka Civil Hospital, Pathardi; Tuesday, 11/23/82
15. Mr. R. T. More, Vaccinator, Taluka Civil Hospital, Pathardi; Tuesday, 11/23/82
16. Smt. M. D. Inamdar, Nurse, Taluka Civil Hospital, Pathardi; Tuesday, 11/23/82
17. Smt. S. B. Bhoi, Auxiliary Nurse Midwife, Karanji; Saturday, 11/27/82
18. Smt. M. P. Mirpagar, Auxiliary Nurse Midwife, Takuli-Manor, Subcentre; Eye Camp, Saturday, 11/20/82

III: Health Workers

19. Mr. S. Dhanwat, Multi Purpose Worker, Paghori-Pimpalgaon, Monday, 11/22/82
22. Mr. P. B. Palwe, Health Guide, Deorai; Saturday, 11/27/82

IV: Community Leaders / Beneficiaries

26. Mr. B. Hhaske, Chairman, Zilla Parishad Health Committee, Ahmednagar; Tuesday, 12/7/82
27. Mr. Y. B. Patel, School Teacher, Paghori-Pimpalgaon; Monday; 11/22/82
28. Mr. M. Karnavat, Retail Shopkeeper, Paghori Pimpalgaon; Monday, 11/22/82
29. Mr. R. N. Dharade, Police Patil, Paghori-Pimpalgaon; Monday, 11/22/82
30. Mr. S. V. Baban-Patel, Deputy Sarpanch, Paghori-Pimpalgaon; Monday, 11/22/82
31. Mr. D. B. Anjire, Police Patil, Kharvandi; Saturday, 11/21/82
32. Mr. B. T. Patel, Sarpanch, Kharvandi; Saturday, 11/21/82
33. Mr. K. Bahete, Owner, Medical Store, Pathardi; Friday, 11/26/82
34. Mr. U. B. Palwe, Sarpanch, Deorai; Saturday, 11/27/82
35. Dr. S. P. Khedkar, Private Practitioner, Karanji; Saturday, 11/27/82
36. Mr. Baburao, Eye Operation Patient, Kharvandi Eye Camp; Saturday, 11/21/82
37. Mr. S. Mahaji, Eye Operation Patient, Kharvandi Eye Camp; Saturday, 11/21/82
38. Smt. A. Anjire, Eye Operation Patient, Kharvandi Eye Camp; Saturday, 11/21/82
39. Smt. K. S. Surje, Post-natal Care Patient, Rural Health Center, Paghori-Pimpalgaon; Monday, 11/22/82
40. Smt. P. C. Dhete, Laparactomy Patient, Taluka Civil Hospital, Pathardi; Wednesday, 11/24/82
41. Smt. H. V. Gaikwad, Laparactomy Patient, Taluka Civil Hospital, Pathardi; Wednesday, 11/24/82
Appendix D

LIST OF PEOPLE INTERVIEWED AT THE COMPREHENSIVE RURAL HEALTH PROJECT, JAMKHED BY NAME, DESIGNATION, PLACE, AND DAY AND DATE OF INTERVIEW

I: Staff

1. Dr. R. Arole, Director, Saturday, 10/31/82 and Sunday, 10/31/82
2. Dr. (Mrs.) M. Arole, Joint Director, Wednesday, 12/1/82 and Tuesday, 12/7/82
3. Smt. Dilpe, Nurse, Instructor, Thursday, 12/2/82
4. Mr. U. D. Thorat, Coordinator; Tuesday, 12/21/82
5. Mr. V. V. Dharekar, Social Worker; Monday, 12/6/82
6. Mr. Ghodake, Leprosy Technician; Monday, 12/6/82
7. Dr. B. D. Kale, Private Practitioner, Bhid; (conducts eye operations at CRHP, Jamkhed); 12/2/82

II: Village Health Workers

8. Smt. Y. Kulkarni, Ghodegaon; Saturday, 12/4/82
9. Smt. S. B. Sadaphule, Sarola; Sunday, 12/5/82
10. Smt. J. S. Sanap, Sakat; Jamkhed; Monday, 12/6/82
11. Smt. S. S. Hamberao, Bawi; Jamkhed; Friday, 12/3/82
12. Smt. A. R. Garje, Nagoli; Jamkhed; Friday, 12/3/82 (She is also sarpanch of her village now)
13. Smt. J. D. Dangad, Mathowali, Ashti Taluka; Jamkhed; Friday, 12/3/82
14. Smt. L. B. Kadam, Pimpalgaon-halwa; Jamkhed, Tuesday, 12/21/82 (She now works as trainer of village health workers for CRHP and health guides who are trained at CRHP for the government)
15. Smt. G. B. Kalange, Sarola; Sunday, 12/5/82
III: Community Leaders

16. Mr. T. M. Gavale, Chairman, Young Farmers' Club, Ghodegaon; Saturday, 12/4/82

17. Mr. T. S. Varhat, Sarpanch, Sakat; Monday, 12/6/84

18. Mr. A. S. Varhat, President, Young Farmers' Club, Sakat; Monday, 12/6/84

19. Mr. R. N. Ajbe, Police Patil, Sarola; Sunday, 12/5/82

20. Mr. A. S. Gawale, Sarpanch, Ghodegaon; Saturday, 12/4/82

21. Mr. S. B. Patil, Social Worker and Landlord, Ghodegaon, Saturday, 12/4/82

22. Smt. A. M. Satpute, President, Mothers' Club, Sarola; Sunday, 12/5/82

23. Mr. D. D. Kamble, Rehabilitated Leprosy Patient, Ghodegaon; Saturday, 12/4/82

24. Smt. S. P. Gaikwad, Rehabilitated Leprosy Patient, Rajuri; Sunday, 12/5/82

25. Mr. G. S. Mandalik, Former Magician now Health Educator, Bawi; Jamkhed; Friday, 12/3/82

26. Mr. T. M. Gawale, Chief Promoter, Sprinkler Irrigation System, Ghodegaon; Saturday, 12/4/82

27. Mr. A. B. Ohol, Tahsildar, Jamkhed; Thursday, 12/2/82
Appendix E

INTERVIEW GUIDES

I: Sarpanch/Members of Panchayat, Jamkhed

1. How did the Jamkhed project directors come to select your village for extending its activities?

2. What were the activities initiated under the auspices of the project first? What are the activities now?

3. What facilities/support has the village provided for these activities?

4. How did your village select the health worker? Why did you select her in particular?

5. What were the major problems in your village before the project initiated its activities here?

6. What are some of the changes that have taken place in your village due to the project's activities?

7. What are some of the major problems the village faces now?

8. Would you recommend to people from other villages where such projects are not there to start similar programmes?

9. Are you happy that your village was chosen by the project for extending its services and activities?

II: Village Health Workers, Jamkhed

1. How did you get selected as the village health worker? Did you volunteer or did someone encourage or force you to become the VHW? What was your occupation before becoming a VHW?

2. Can you tell us about what training you had at Jamkhed?

3. What are your responsibilities now as the village health worker? Please tell us with examples.

4. What is your daily routine as the village health worker?

5. What is the focus of your activities in the village?
6. How is your relation with the sarpanch and the panchayat? Are they cooperative and helpful?

7. What were the health problems in the village before you became a village health worker?

8. What are the major health problems now? How do you try to solve them?

9. Are you happy that you have been selected as the village health worker by your village?

III: Members or Leaders of Young Farmers' Club, Jamkhed

1. When and how was the young farmers' club started?

2. How many members were there in the beginning? How many are there now?

3. What are the various activities of the young farmers' club?

4. What are the health related activities?

5. Do you or other members of your club help the village health worker in her work? If yes, how and in what kind of activities?

6. What were the major problems faced by your village before your club was started?

7. What are the major problems faced by the village now? How does the club try to solve them?

8. What are some of the changes that have taken place in your village after the Jamkhed project initiated its activities in your village?

9. Are you happy that your village was selected by the project for extending their services and activities?

IV: Patients/Rehabilitated Patients, Jamkhed

1. How long did you have this sickness?

2. Did you believe it (T.B., leprosy etc.) was due to the curse of god/gods?

3. Did you go for treatment yourself? If no, who took you to the doctor/hospital?
5. How long have you been on treatment? What was the treatment?
6. How do you feel now?

**V: Community Health Volunteers--Pathardi**

1. How were you selected as the community health volunteer?
2. Where were you trained? What were you taught during training?
3. What are your responsibilities as a community health volunteer? Please elaborate.
4. What are the major health problems of the people in your village?
5. What kind of records do you keep?
6. Who supervises your work?
7. Do you get your honorarium on time?
8. Are you happy to be working as the community health volunteer of your village?
9. What are some things you would like to improve in your village?

**VI: Sarpanch/Member of Panchayat--Pathardi**

1. What are the main health related problems in the village?
2. What is being done to solve these problems?
3. What are the health facilities and personnel available in the village?
4. How often does the doctor from the PHC visit your village?
5. Is good drinking water available to all the villagers?
6. Who is the community health volunteer in the village? 
   How was he/she selected? Where was he/she trained? 
   What are his/her duties? Are they useful in improving health in the village?
7. Is there a mother's club in the village? If yes, what are their activities?
8. Is there a farmers' club in the village? If yes, what are their activities?
### Appendix F

#### CODEBOOK

<table>
<thead>
<tr>
<th>S00</th>
<th>SOCIAL SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>S01</td>
<td>Economy</td>
</tr>
<tr>
<td>S03</td>
<td>Subsistence/Indebtedness</td>
</tr>
<tr>
<td>S04</td>
<td>Polity/Power</td>
</tr>
<tr>
<td>S05</td>
<td>Caste</td>
</tr>
<tr>
<td>S06</td>
<td>Class</td>
</tr>
<tr>
<td>S11</td>
<td>Women</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S20</th>
<th>SOCIAL STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>S21</td>
<td>Stratification</td>
</tr>
<tr>
<td>S22</td>
<td>Caste Stratification</td>
</tr>
<tr>
<td>S23</td>
<td>Class Stratification</td>
</tr>
<tr>
<td>S25</td>
<td>Poverty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S40</th>
<th>SOCIAL NORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>S43</td>
<td>Untouchability</td>
</tr>
<tr>
<td>S51</td>
<td>Preference for Male Offspring</td>
</tr>
<tr>
<td>S52</td>
<td>Neglect of Female Children</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>S60</th>
<th>SOCIAL VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>S72</td>
<td>Female Illiteracy</td>
</tr>
<tr>
<td>S74</td>
<td>Female Subjugation</td>
</tr>
<tr>
<td>S75</td>
<td>Role of Women in Family</td>
</tr>
<tr>
<td>S80</td>
<td>Dominant Male</td>
</tr>
<tr>
<td>S85</td>
<td>Harijans/Untouchables</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K01</th>
<th>NONPOSITIVE TRADITIONAL KNOWLEDGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>K02</td>
<td>No breast feeding of babies</td>
</tr>
<tr>
<td>K03</td>
<td>Illnesses as curse of gods</td>
</tr>
<tr>
<td>K04</td>
<td>Unhygienic childbirth practices</td>
</tr>
<tr>
<td>K11</td>
<td>Contaminated drinking water</td>
</tr>
<tr>
<td>K11a</td>
<td>Leprosy unclean/curse of gods</td>
</tr>
<tr>
<td>K16</td>
<td>Snake-bite victims left in temple to die</td>
</tr>
<tr>
<td>K17</td>
<td>Using tongue to remove dirt from eye</td>
</tr>
<tr>
<td>K18</td>
<td>No water given to babies up to eighteen months</td>
</tr>
<tr>
<td>K19</td>
<td>No papaya, mango or nuts for pregnant women</td>
</tr>
<tr>
<td>K19a</td>
<td>No food for small pox victims</td>
</tr>
</tbody>
</table>
19d Ash from temple fire used as medicine
19e Passing a pitcher of water to a woman in labor

20 POSITIVE TRADITIONAL KNOWLEDGE
21 Breast feeding babies
22 Squatting position in childbirth
23 Ayurvedic treatments
27 Fermented rice water for diarrhoea

40 NON-POSITIVE MODERN KNOWLEDGE
41 Over medication
42 Drug dependency
43 Injections better than pills
45 Cheap medicines are ineffective
47 Vitamin pills will induce abortion

60 POSITIVE MODERN KNOWLEDGE
61 Allopathic drugs
62 Ayurvedic drugs
64 Immunizations for children
65 Immunizations for pregnant women
66 Prevention and treatment of communicable diseases
67 Prevention and Treatment of non-communicable diseases
70 Ante and Post natal care for women
71 Child care
73 Birth control

01 PROBLEM IDENTIFICATION / KNOWLEDGE PRODUCTION
02 Knowledge of social system
03 Knowledge of social structure
04 Knowledge of social institutions
05 Knowledge of social values and beliefs
06 Knowledge of social norms
07 Knowledge of social roles
08 Non-positive traditional knowledge
09 Positive traditional knowledge
10 Non-positive modern knowledge
11 Positive modern knowledge
12 Knowledge of problems of health
13 Knowledge of problems of population
14 Knowledge of problems of child health
15 Knowledge of problems of maternal health
16 Knowledge of diseases
**PROBLEM DEFINITION / KNOWLEDGE MANAGEMENT**

- Philosophy/value orientation of project
- Communication of problem
- Preliminary study/benchmark survey
- Adopter perspective
- Change Agency Perspective
- Policy maker Perspective

**PROBLEM SPECIFICATION / KNOWLEDGE TRANSLATION**

- Specific Problems
- Targets
- Priorities
- Budget allocation

**PROGRAM FORMULATION / PRODUCT DEVELOPMENT**

- Setting goals and objectives
- Ranking areas of action
- Targets in terms of goals
- Source of funding
- Budget allocation for each area of action
- Organization structure
- Project structure--open/participatory
- Leadership
- Management style
- Division of labor
- Selection of personnel
- Training of personnel
- Salary schedule
- VHWHW routine
- CHW/HG routine
- Problems at work
- Job satisfaction
- Promotional opportunities
- Young farmers' club
- Mothers' club

**PROGRAM IMPLEMENTATION / PRODUCT DISSEMINATION**

- Implementation strategies
- Obtaining people's participation
- Overcoming resistance to change
- Reaching vulnerable sections
- Communication media used
- Mass media
- Interpersonal/indigenous -- VLW/HG
- Interpersonal/exogenous -- ANM
<table>
<thead>
<tr>
<th>x73</th>
<th>Messages used</th>
</tr>
</thead>
<tbody>
<tr>
<td>x731</td>
<td>Local/folk idioms</td>
</tr>
<tr>
<td>x732</td>
<td>Literary/standard idioms</td>
</tr>
<tr>
<td>x74</td>
<td>Packaging messages--format</td>
</tr>
<tr>
<td>x741</td>
<td>Slogans</td>
</tr>
<tr>
<td>x742</td>
<td>Radio messages</td>
</tr>
<tr>
<td>x743</td>
<td>Audio-visual aids</td>
</tr>
<tr>
<td>x744</td>
<td>Interpersonal networks</td>
</tr>
<tr>
<td>x745</td>
<td>Songs/drama</td>
</tr>
<tr>
<td>x75</td>
<td>Communication style</td>
</tr>
<tr>
<td>x751</td>
<td>Memos</td>
</tr>
<tr>
<td>x752</td>
<td>Formal Meetings</td>
</tr>
<tr>
<td>x753</td>
<td>Informal Meetings</td>
</tr>
<tr>
<td>x754</td>
<td>Feedback</td>
</tr>
<tr>
<td>x755</td>
<td>Follow up</td>
</tr>
<tr>
<td>x76</td>
<td>Communication model</td>
</tr>
<tr>
<td>x761</td>
<td>Linear</td>
</tr>
<tr>
<td>x762</td>
<td>Convergent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>x80</th>
<th>PROGRAM ADOPTION / PRODUCT EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>x81</td>
<td>Outcome/general impact</td>
</tr>
<tr>
<td>x811</td>
<td>Impact of VHWs</td>
</tr>
<tr>
<td>x812</td>
<td>Impact of CHVs/HGs</td>
</tr>
<tr>
<td>x821</td>
<td>Infant mortality rates</td>
</tr>
<tr>
<td>x822</td>
<td>Ante-natal care</td>
</tr>
<tr>
<td>x823</td>
<td>Family planning</td>
</tr>
<tr>
<td>x824</td>
<td>Curative care</td>
</tr>
<tr>
<td>x90</td>
<td>General problems</td>
</tr>
<tr>
<td>x91</td>
<td>Redesign</td>
</tr>
<tr>
<td>x100</td>
<td>Evaluation of CRHP by Government officers</td>
</tr>
<tr>
<td>x101</td>
<td>Evaluation of Government program by Jamkhed leaders</td>
</tr>
<tr>
<td>x104</td>
<td>How to obtain people's participation</td>
</tr>
<tr>
<td>x105</td>
<td>Attitude to my study</td>
</tr>
</tbody>
</table>
Appendix G

RAISE THE VOICE OF UNITY

Raise the voice of unity
Beat the drums all over for unity
The only problem of today is
Everybody is puffed up with self.

There are fights between brothers
Monkeys are better than humans
There is groupism everywhere
Some are here, some are there.

Let us carry the torch of revolution
Let us light the torch
Let us beat the drum all over the world

There are 17 parties and 35 groups
There is no unity in these groups
Everyone is trying to break the unity
Let us try to mend this unity
The one who is a fool like this
Who works too little and talks too much

Let us raise the voice of unity
Beat the drums all over the world for unity

Our gaddi* has stayed behind
Whole world has gone ahead
Why can't you be wide awake
Get up, Keshar+, start working

Let us raise the voice of unity
Beat the drums all over for unity
Stop the in-fighting and
Let us raise the voice of unity.

* vehicle, implying 'wheel of progress.'
+ Proper name of a woman.

[Translated from Marathi by Dr. K. S. Rajyashree]
BIBLIOGRAPHY

Abraham, A. S.

Agrawal, Binod C.

Alderman, Michael A.

Alliband, Terry

Amin, Samir

Andrade, Manuel Correia de

Ankleswaria, Shahnaz

Antia, N. H.

Apter, David

Arensberg, Conrad and Arthur H. Niehoff
Arole, Mabelle

Arole, R. S.

Arole, R. S. and Mabelle Arole
1982 The Comprehensive Rural Health Project, Jamkhed.

Balasubhramanian, Vimal

Banerjee, Nirmala

Banerji, D.

Baran, Paul

Baran, Paul and Paul Sweezy

Basu, Alaka Malwade

Beltran, Luis R.
Bengoa, J. M. and G. Donoso

Bhore, Sir Joseph

Binder, Leonard

Binder, Leonard et al

Bluestone, Barry

Brara, J. S.

Bryant, Coralie and Louise G. White

Bryant, J.

Caldwell, John C., P. H. Redddy and Pat Caldwell

Cardoso, Fernando Henrique

Census of India 1961

Census of India 1971
Chakravarthy, Ujjayant N.  

Chandra, Prakash  
1983 "Dowry Deaths: An Evil that Is Coming out in the Open," India Abroad (Life and Leisure Supplement), (October 14), p. III.

Chase-Dunn, C.  

Chatterjee, Manini  

Chaudhuri, Pramit  

Chilcote, Ronald H.  

Chopra, R. N.  

Chowdhury, Neerja  

Coser, Louis  

Coyaji, Banoo J.  

Desai, B. M. et al  
1976 Rural Development for Rural Poor: Dharampur Project, Vol. II. Ahmedabad; Centre for Management in Agriculture, Indian Institute of Management.
Deutsch, Karl W.  
1953 Nationalism and Social Communication: An Inquiry into the 
Foundation of Nationality. New York: Technology Press of the 
Massachusetts Institute of Technology and John Wiley & Sons.

Development: Seeds of Change  

Diaz, Bordenave J.  
1976 "Communication of Agricultural Innovations in Latin America: 
The Need for New Models," Communication Research. 3: 2: 
135-154.

Dissanayake, Wimal  
1982 "Understanding the Role of the Environment in Knowledge 
Generation and Use: A Plea for a Hermeneutical Approach," 
Paper presented at the Conference on Transnational Knowledge 
Utilization: Theory and Practice. Communication Institute, 
East West Center, Honolulu, April 25-30, 1982.

Djurfeldt, Goran and Stefan Lindberg  
1975 Pills Against Poverty: A Study of the Introduction of Western 
Medicine in a Tamil Village. Scandinavian Institute of Asian 
Studies Monograph Series, No. 23.

Doob, Leonard W.  
1964 Patriotism and Nationalism: The Psychological Foundations. 
New Haven: Yale University Press.

Dos Santos, Theotonio  
(May): 231-236.

Doyal, Lesley with Imogen Pennel  

Dube, Leela  
1983 "Misadventures in Amniocentesis," Economic and Political 

Eisenstadt, Shmuel N.  
1964 "Modernization and Conditions of Sustained Growth." World 

Emmanuel, Arghiri  
Faruqee, Rashid and Ethna Johnson

Foster-Carter, Aiden

Franda, Marcus

Frank, Andre Gunder

Freire, Paulo

Friedman, John

Furtado, Celso

Galtung, Johan

Gideonse, H. G.

Gish, O.
Golding, P.

Gonzalez Casanova, Pablo

Gothaskar, Sujatha, Rohini Banaji and Neelam Chaturvedi

Goulet, Denis

Griffin, Keith

Grunig, J. E.

Guba, E. G. and D. C. Clark

Gupta, A. R.

Gwatkin, Davidson R., Janet R. Wilcox and Joe D. Wray

Hardiman, Margaret G. W.

Haque, Wahidul

Havens, A. E.
Hedebro, Goran

Hilferding, Rudolf

Hindustan Times, The
1884a "18,499 Medical Graduates Unemployed," (March 15), p. 8, col. 1.

Hindustan Times Correspondent

Huntington, Samuel P.
1968 Political Order in Developing Societies. New Haven: Yale University Press.

Illich, Ivan

Inayatullah (ed.)

India Abroad
1983 "US Health Grant (to India)," XIV: 8 (November 16), p. 16, col. 5.

Indian Council of Social Science Research / Indian Council of Medical Research

Jayaraman, R.
Jeffrey, Roger and Patricia Jeffrey

Jhabvala, Renana
1984 "One Mouth, but Two Hands," Hindustan Times Sunday Magazine. (June 10). p. 5. cols. 5-8.

Joshi, Barbara R.

Kaithathara, Sara

Karkaria, Bachi J.

Kautsky, Karl

King, M.
1966 Medical Care in Developing Countries. Nairobi: Oxford University Press.

Koo, Hagen

Kotler, P. and G. Zaltman

Kumar, Dharma
1983 "Male Utopias or Nightmares?" Economic and Political Weekly. XVIII: 3: 61-64.

Kumar, Vijay

Lele, Uma

Lenin, V. I.
Lerner, Daniel
1958 The Passing of Traditional Society: Modernizing the Middle East. Glencoe, Ill.: Free Press.

Lippit, Victor D.

Lipset, Seymour Martin

Lipton, Michael

Luxemburg, Rosa

Macpherson, Stewart

Magdoff, Harry

Mahadevan, Ashok

Malgavkar, Prabhakar D.

Malgavkar, P. D. and V. A. Pai Panandikar

Mamdani, M.

Marceau, F. J.

Marini, Ruy Mauro
Maru, Rishkesh M.

Marx, Karl

McClelland, D.

Meehan, Peter M. and George M. Beal

Mehta, Niranjan

Mehta, Niranjan, Wahidud ul Haq and Ponna Wignaraja

Miles, Mathew B. and A. Michael Huberman

Miller, Barbara

Ministry of Health and Family Planning, Central Bureau of Health Statistics

Ministry of Health and Family Welfare
1980 Curricula for Training of Staff of the Primary Health Centre. New Delhi: Government of India.

Ministry of Information and Broadcasting, Publications Division
Moore, Barrington

Mudaliar, Sir Laksmanswamy

Nicholson, Norman K.

Nichter, Mark

Pandey, S. R.

Parsons, Talcott.

Plakkoottam, Joseph L.

Pye, Lucien W.

Rahim, Syed A. (ed.)

Rajagopalan, S.

Ramachandran, V. G.
Ratcliffe, John W.

Revankar, Ratna G.

Riggs, Fred W.

Rodney, Walter

Rogers, Everett M.

Rogers, Everett M. and F. Floyd Shoemaker

Rogers, Everett M. and Douglas S. Solomon

Roling, Niels G., Joseph Ascroft and Fred Wa Chege

Rondinelli, Dennis A. and Kenneth Ruddle
Rostow, Walt W.

Rubinson, R.

Schramm, Wilbur

Schramm, Wilbur and Daniel Lerner

Schumpeter, Joseph

Seers, Dudley

Sen, Amartya and Sunil Sengupta

Sethi, Harsh

Sevagram Medico Friend Circle

Sharma, Chandra Shekhar
Sheth, D. L.

Shingi, Prakash M. and Bella Mody

Singh, Chander Uday

Skocpol, Theda

Srikantan, K. Sivaswamy, K. Balasubramanian and Surekha Nikam

Srinivas, M. N.

Sukhatme, P. V.

Sullivan, Gerard

Sunkel, Osvaldo
Taylor, John G.

Times of India, The

Udupa, K. N.

Visaria, Pravin and Leela Visaria

Vishwanath, L. S.

Voluntary Health Association of India

Wallerstein, Immanuel

Weber, Max

Wiesner, Stan

Wignaraja, Ponna

World Bank, The
World Health Organization

Zachariah, K. C. and R. S. Kurup

Zaltman, Gerald

Zaltman, Gerald and Robert Duncan