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# Teaching of health with the Meikirch model to indigenous people improves their health-supporting behavior: A pilot study

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## ABSTRACT

**Background:** In a number of indigenous villages in Orissa, India, the possibility was explored that teaching of a new definition of health, the Meikirch model, might improve health behavior of inhabitants beyond what can be achieved by ordinary teaching. **Methods:** For this purpose, teaching about the Meikirch model was given in twenty experimental villages and conventional teaching about health in twenty control villages. **Results:** After 2½ years, health behavior in the two groups of villages was compared. Improvement of nutrition, wearing of slippers during use of latrines, washing of hands before meals, availability of latrines, childhood vaccination, use of mosquito nets, and attention to mother/child care were much better in experimental than in control villages (all  $P < 0.001$ ). Yet, in several aspects of the experimental villages, there was room for further improvement. **Conclusion:** It is concluded that the Meikirch model was understood by the inhabitants of the villages and they improved their health behavior. These preliminary results justify formal studies with larger samples to validate the results and possibly to improve teaching methods.

**Keywords:** Definition of health, health behavior, Meikirch Model

## Introduction

In 2000, the National Youth Service Action and Social Development Research Institute (NYSASDRI), a charitable organization, for the development of villages with indigenous people took over the responsibility for tribal villages in the Gondia region, a relatively inaccessible forest area of Orissa, India. The purpose was to develop a long-term water supply for each village and to promote education, food security, land legalization, local administration, and a working relationship with the government. Among

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the many problems of the inhabitants of these villages, the health situation has remained difficult. Therefore, innovative methods to teach local people about health behavior were looked for. One of them was the Meikirch model, a recently developed definition of health that might give villagers a new understanding about how health can be maintained.<sup>[1]</sup> This model does not change any procedure to maintain health, but it puts them into new and more rational context.<sup>[2]</sup> An initial trial of teaching about health with the help of the Meikirch model appeared to be encouraging.<sup>[3]</sup> For this reason, it was decided to test this method in a group of twenty villages. The present study has the purpose to assess what has been accomplished by teaching this new concept of health.

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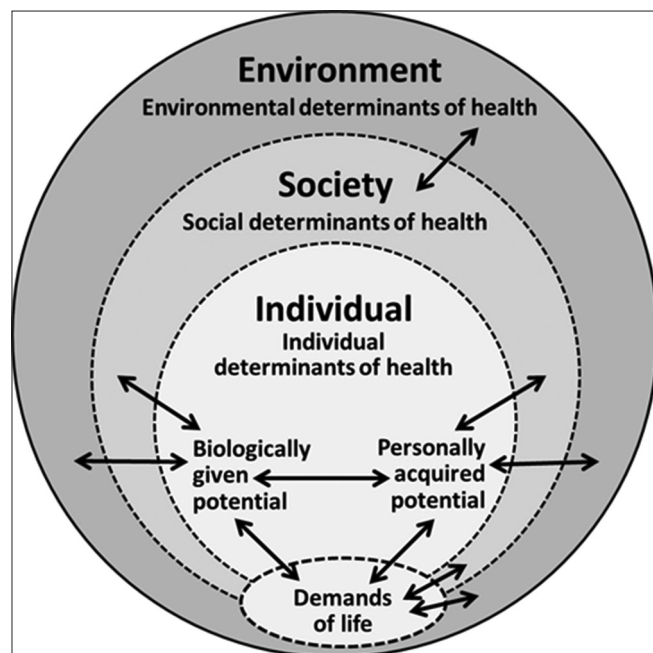
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## Methods

In 2013, a pilot study about the usefulness of the Meikirch model involving 40 villages was initiated. Teaching of the Meikirch model was applied in twenty “experimental” villages.<sup>[2]</sup> Twenty similar villages from the same region were used as “controls.” In all villages, the ordinary government program for health was also applied. The main features of the composition of the two groups of villages are given in Table 1. In the experimental villages, thirty village meetings were organized within 3 years by representatives of the NYSASDRI. Among the ordinary agenda, there was always some time to teach about the Meikirch model. In addition, there were meetings about the model with village leaders and with women groups.

Teaching about the Meikirch model started with a discussion of the demands of life [Table 2 and Figure 1].<sup>[3]</sup> The resources needed to deal with the demands of life were explained. They have to be present in each moment but must serve also in the future. Therefore, they are called potentials. The biologically given potential (BGP) was elucidated as a gift of life from the parents. In contrast, the personally acquired potential (PAP) is the site of personal responsibility for health. To assume this, responsibility is the duty of every individual. Good relations with the members of the village are important for mutual learning and assistance and for protection against threats in the environment. Yet, further, the society has to assume responsibility by interacting with individuals and by facilitating self-care. Child vaccination was a special problem.



**Figure 1:** Diagram of the Meikirch model to explain the different components of health. In the text, the biologically given potential is abbreviated as BGP and the personally acquired potential as PAP (the figure is taken from Bircher and Hahn)

It was run by health workers from the government but with limited success. For this reason, the health workers were invited to the NYSASDRI Organization for a teaching of the Meikirch model and cooperation could be established.

The effect of teaching about the Meikirch model was evaluated by assessing health behavior in the experimental and the control villages. The data were collected by sending representatives of the NYSASDRI Organization to each village to get the information in focus group discussions and in interactions with community members. Relationship between the NYSASDRI Organization and these village people is based on mutual trust because the company had serviced them already for many years. The representatives left the villages only when they were convinced that the information they had collected was valid.

Outcomes were analyzed by the following criteria:

1. Rice, the main nutrient in this area, must be complemented by vegetables that are bought on markets or grown in the villages, e.g., carrots, papaya, and guava. Households

**Table 1: Characteristics of the examined villages (mean, standard deviation, and t-tests)**

Examined features	Control villages	Experimental villages	P
Number of households/villages	31±15	45±28	NS
Number of persons/village	163±73	241±149	<0.05
Children 0-14 years old in (%)	28±1	28±1	NS
Persons older than 55 years in (%)	14±1	14±2	NS
Male/female ratio	0.97±0.04	0.98±0.06	NS

NS: Not significant, P: Probability

**Table 2: Demands of life: The Meikirch model is used to teach a rational approach to these demands. All of them must be considered. Some examples are given**

Demands of life	Examples
Biological demands	Nutrition: Not only rice but also legumes and fruits Protection: Housing for rainy season and against wild animals Prevention from mosquito bites (malaria), snakes and scorpions, wild animals by mosquito nets and latrines Hand washing before meals and after excretions Vaccination of mothers and children Prevention of sexual diseases
Psychosocial demands	Rational approach to life instead of blind beliefs and superstition Maintain happy family life, love for children, encourage schooling, avoid alcohol Confidence building to support each other at the time of need Cooperation within and among the villages
Environmental demands	Survival in rainy season Protection from wild animals Protection from pathogens Survival in the dry season instead of migration

were considered to have improved nutrition when they cultivated a garden or had enough money to purchase vegetables

2. The wearing of slippers during the use of latrines and the washing of hands before meals are continuously supervised in all villages. Therefore, they could easily be assessed
3. The latrines per household were counted
4. Childhood vaccination and use of mosquito nets are assessed by workers from the NYSASDRI as a health standard in each village
5. Good attention to mother–child care requires regular care of women during pregnancy, deliveries at a hospital, supervision of child care, including regular child examination and recordings by auxiliary nurse midwives. If these conditions were met, a household was considered to give good attention to mother/child care.

For statistical analysis, means, standard deviations, and *t*-tests were used.

## Results

The two groups of villages are characterized in Tables 1 and 2. There is a tendency for more households in the experimental villages. There are significantly more persons per experimental village. The percentage of children and elderly people, however, are not different between the groups, but they reveal that the population has many children and relatively few persons are beyond 55 years. The male/female ratio is close to 1.0 in both groups of villages. Death rates analyzed in four age groups were not different between the experimental and the control villages. These data show that the experimental villages were larger than the control villages, but otherwise, they did not truly diverge.

There are impressive differences in health-supporting behavior between the experimental and the control villages [Table 3]. Yet, in some respects, even the experimental villages can improve further. There are only 35% ± 3% of households with improved nutrition in the experimental villages. In control villages, the number is significantly lower 27% ± 4%. Further, wearing of shoes during the use of the latrine was only 74% ± 9% in experimental villages, yet the controls were at 41% ± 10%. It would be desirable that the experimental group would further improve its number of latrines per household which is only 80% ± 8%. The percentage of persons washing hands before meals, children being vaccinated, mosquito nets being used, and households giving good attention to mother–child care was above 90% in the experimental group and very much lower in the control group. All differences are highly

significant statistically ( $P < 0.001$ ). Consequently, the data show that teaching of the Meikirch model has been very effective for the population of the experimental villages although some features need further improvement.

## Discussion

This study reveals that teaching of the Meikirch model has markedly improved the health-supporting behavior of village people in Orissa. Yet, this conclusion must be accepted only after due consideration of the limitations of the study. This investigation was not planned prospectively. The experimental and the control villages were not selected by a formal randomization procedure. They were chosen by a conscious effort to randomize. They are derived from the same geographic area and the people experience the same economic conditions. Inhabitants are analphabets, farmers, or laborers. The fact that the experimental villages had more persons per village is not thought to influence the results because presumably such differences in size of the population are not determinants of health behavior. In addition, the villages were similar in all other examined respects [Table 1]. Each of the criteria for the assessment of health-supporting behavior obviously is soft. Yet, the agents of the NYSASDRI Organization who collected the data were not aware of the purpose of the study. The leadership wanted to assess the real situation. The investigated differences between the experimental and the control villages are very important and statistically highly significant. Thus, we conclude that the analyzed limitations do not invalidate the main conclusions of this investigation.

The question remains, why teaching of the Meikirch model did not bring all measures of health behavior close to 100%. In regard to the improvement of nutrition, poverty seems to be a limiting factor. The use of latrines and the wearing of slippers during their use were new to many inhabitants of these villages. It is not surprising therefore that it takes time

**Table 3: Effects of teaching the Meikirch model in experimental villages (mean, standard deviation, and *t*-test)**

Examined features	Control villages	Experimental villages	<i>P</i>
Households with improved nutrition (%)	27±4	35±3	<0.001
Persons wearing slippers during use of latrines (%)	41±10	74±9	<0.001
Persons washing hands before meals (%)	41±10	90±4	<0.001
Latrines per household (%)	42±18	80±8	<0.001
Childhood vaccination (%)	57±7	97±3	<0.001
Households with mosquito nets (%)	68±17	97±7	<0.001
Households with good attention to mother/child care (%)	79±11	98±1	<0.001



to introduce new habits. More teaching and more time will be needed to improve this behavior. The mosquito nets also were a problem. They were supplied by the government, but many inhabitants preferred to use them for fishing. Finally, superstition or blind beliefs were obstacles to change toward a health-supporting behavior.

It is difficult to know why the Meikirch model is better than ordinary teaching about health. The model, however, emphasizes the locus of responsibility for health, the PAP, and the social determinants of health. In this case, the society does much for the health of these indigenous people including the teaching. Yet, so far, there has been little emphasis on responsibility. The separation of the resources of individuals into a BGP and a PAP was easily understood by the inhabitants of the villages. Thereby, the focus and purpose of responsibility of each individual became clear. Although speculative, it is our hypothesis that the Meikirch model makes it more inescapable to accept personal responsibility for health.

The results of this study are preliminary. More research is needed to verify that the teaching of the Meikirch model

remains as effective as revealed in the presented data. Nevertheless, our results suggest that even illiterate indigenous people reacted positively. Thus, education *per se* is not a prerequisite for the understanding of the model and its significance.

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### Conflicts of interest

There are no conflicts of interest.

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