

# Mothers' Participation in Improving Growth and Nutrition of the Children: a Model for Community Participation

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## Abstract

**Background:** Assessment of national children growth has shown that a high percent of Country's children are afflicted to growth failure. Community participation is one of the principles of PHC emphasized by WHO that is necessary for development of health services. The objective of this study was to develop a model for mother's participation in order to improving growth and nutrition of children.

**Methods:** This community-based field trial was rendered on 74 pairs of mothers and children less than three years of age. A model was designed for increasing mother's participation, so that, a group of mother's volunteered and were instructed in the subjects of growth monitoring and child nutrition. The program was evaluated by CIPP Model (Context, Input, Product, Process).

**Results:** Difference between the mean grade of mothers' knowledge and practice, before and after intervention were meaningful ( $P < 0.001$ ). This plan had considerable effects on the increase of individual and social capabilities of the participants, including their self-confidence. Other findings were related to the evaluation of impact, effectiveness, sustainability and transportability of the program.

**Conclusion:** By enhancement of mother's participation, considerable improvement of their knowledge and practice concerning growth and nutrition of children were achieved. Also individual and social capabilities of the mothers' increased.

**Keywords:** Community participation, Nutrition, Child, Growth monitoring, CIPP evaluation, Models, Health education, Knowledge, Practice, Empowerment

## Introduction

The birth of more than a million children, in our country, is a very strong reason to engage in physical and psychological health of the child. Country survey for assessment of child growth and development ANIS (Anthropometric and Nutrition Indicator Survey) in 1998 showed that a large percent of country's children are afflicted with growth failure which begins from 6 months old and reaches its climax at 18 mo old, and then the child never gets its lost weight (1). Also this research showed that in Isfahan Province one out of nine children is afflicted with severe weight loss, and one out of 3 or 4 children has slight weight loss; approximately 37% of mothers

did not know growth chart and about 70% did not have proper understanding of it (1).

Considering these facts, it is necessary to implement some project to increase quality of our country's children growth, physical and mental abilities. One of the approaches for promoting society health is community participation. WHO has declared that community participation is the basis of health promotion and the main key of primary health services (2).

The major components of community participation include social institutions, educational programs and decentralized health system (3).

It seems that these aspects of community participation have not been considered enough in

our Health System. The role of NGOs related to health is limited since the control of nearly all health programs always held by governmental organization. In addition, considering 5 levels of community participation, there are only the first and sometimes, the second levels of participation in our country (including participation in the benefits of programs and in the program activities). Higher levels (including community participation in implementing health programs, monitoring, evaluation and planning programs) have no specific programs in Health System (1). It is clear that engaging the community in different activities especially in health programs have many beneficial as mentioned in different studies below, but because of different cultures, social psychology and various other social issues, enhancement of community participation in higher levels is faced to many problems. So we decided to design a suitable model to enhancement of community participation in order to improving growth and nutrition of children. Before designing any models to fulfill the above objectives, it was considered appropriate to review various program models, preferably on health and family planning, with a reasonable level of success in community participation. Therefore we studied many international experiences that have been used community participation with the objectives of identifying a range of models used for increasing community participation for development of health programs, such as studies that have been done in USA, Canada, Sweden, India, Kenya, Tanzania, Bolivia, Bangladesh, Indonesia and South Africa. In these countries, community participation in health program caused considerable improvement of society health, such as decline in infant and maternal mortality, reducing the incidence of chronic disease, decline children malnutrition, and improvement of mothers' ability in children's growth monitoring, decline food insecurity for women, infants, and children, improvement of immunization for children, timely detection and treatment of illnesses (2-8). Also in many countries special community intervention programs were used for health promotion such

as protective behaviors program against cardiac risk factors and CVD prevention program in high risk population, projects for diabetes prevention, oral health promotion program, health promotion/prevention program for children and families, public health program to deal with substance use, infectious diseases, and asthma (9-15).

Thus, in this study three sources were used for designing a model for the purpose of enhancement of community participation including the experiences of participation in our country and other countries, levels of community participation and The CIPP Evaluation Model. The CIPP (Context, Input, Process, Product) Evaluation Model is a comprehensive framework for guiding evaluations of programs, projects, personnel, products, institutions, and systems (16). The model was adjusted to the social and cultural characteristics of the participants and also specifications of the District Health System were considered. The aims of this study were: presenting a model for the purpose of enhancement of community participation, improvement of children's care by mothers and increase individual and social capabilities of the mothers.

## **Materials and Methods**

This study was a community-based field trial. By calculating sample size with 95% CI (Confidence Interval) and power of 80 precedents, in total 74 pairs of mothers and children less than three years of age were chosen. This study performed during 2003-2004, in the area of Azadegan that is placed in one of the eastern part of the Isfahan City. This place has one health center and criteria of entering to the study for the mothers were those who referring to this center for caring of their children after childbirth till the time of study. Method of sampling was nonprobable consecutive that means we chose all mothers which had criteria of entering to the study until the sampling was completed. In this study a model was planned. For planning, implementing and evaluation of this model, all stages of The CIPP Model were used and for each stage special indices and criteria were determined. These stages are as follows:

In the first stage (contractual agreements), all stakeholders and beneficiaries were identified, including mothers and their children, their neighbors, relatives and acquaintances, local health workers, related experts in District Health Center and some professors of Medical and Health Faculty. The goals and objectives of the project were clarified for them. In this stage also, after receiving the view points of the stakeholders about all the processes of planning, implementing and evaluation of the project and the details of the plan were clarified. In the second stage (context), the background information of the plan was collected with the help of the stakeholders (such as percentage of children under care of Local Health Center and those were under special care, also information concerning resources, possibilities, problems and the district needs). In the 3rd stage (inputs), all inputs of the project were provided; some of them are as follows:

International experiences and models that have been used for increasing the levels of community participation;

Responsive program's proposed strategy to assess needs and feasibility;

Sufficient program's budget to fund the needed work;

Sufficient, feasible and politically viable program's work plan;

Necessary instructions for training some of the stakeholders to carry out the plan.

In the 4<sup>th</sup> stage (processes of the plan), the beneficiaries of the plan were called for gathering in a seminar and were explained concerning the generalities of the plan, its goals and positive effects of the project. At the end of the seminar, some volunteers were chosen. Following the choice of volunteers, steering committee of the project was formed, with the presence of local health workers, program leaders and mentioned volunteers. In this Committee decisions were made concerning how to continue the plan, and solving the problems. Then the volunteers were instructed by the plan performers.

The educational contents of the present model consisted 3 subjects of growth monitoring, com-

plementary nutrition and stages of child's nutritional development (homeostasis, attachment, separation individuation) (17).

On this basis, all the necessary matters were provided, including teaching plan and suitable pamphlets. During 10 mo of intervention, there were 2 educational sessions every week. The team of instructors was 3 persons (one pediatrician and 2 specialists in Community Medicine). Before and after the instruction knowledge and practice of the mothers were assessed by a designed questionnaire. This questionnaire had 3 parts based on the educational contents and had 45 items. The content validity was established by taking view of some experts and using suitable references like ANIS study (1).

Reliability of the questionnaire was determined by using Test-re Test and calculating the Cronbach's Alpha that was 72.53%. By the help of volunteers, other beneficiaries of the plan who had participated in the initial seminar were divided into sub-groups. Then the volunteers instructed mothers of sub-groups of what they had learned.

Before and after completing the instruction of sub-groups, the plan questionnaire was filled.

In the 5<sup>th</sup> stage (evaluation), the products of the plan include impact, effectiveness; sustainability and transportability were evaluated by the latest version of CIPP Model. Some effects of the plan are as follows:

The effects of plan on nontargeted group of the project, including spouses of beneficiaries, relatives, acquaintances, their neighbors and also on other children of the families who were not in the same age group of the plan;

The effects of plan on self-confidence of participated beneficiaries (In this case, a standard Kopper-Smith questionnaire before and after intervention was used);

Extent to which the program addressed important community needs;

The depth, quality and significance of the plan effects on the beneficiaries;

Effects of the plan which have been sustainable after its completion such as continuation of group activity in the form of an NGO;

Transportability effects of the projects, including the use of planned model in other regions and for development of other health services.

To assess the effects that mentioned above the CIPP Model has some especial criteria that had been used and because of expanding of the work in this article we did not proceed to all of them.

The entire activities of the plan were continuously documented and monitored by the stakeholders of the plan.

The data collected from plan questionnaire were analyzed by using the SPSS software program and suitable statistical tests like Wilcoxon, paired *t*-test and McNemar were used.

## Results

The mean age of participant mothers in the plan was  $25.64 \pm 4.44$  yr. The mean age of children was  $12.38 \pm 4.48$  mo. 48.6% of children were boys. Children growth in the last three months (on the basis of growth charts in 4 positions, growth falling, flattening, faltering and normal growth were assessed before and after interference (Fig. 1). (Growth monitoring of children were based on the growth chart, especially consecutive 3 mo before the time of starting the study). The difference of growth situation was meaningful before and after intervention by Wilcoxon test ( $P < 0.001$ ).

Concerning the knowledge of the mothers about growth chart, before intervention 73% of mothers were acquainted with growth charts and it was increased to 100% after performing of model. It was meaningful by McNemar test ( $P < 0.001$ ).

The mean grade of mothers' knowledge and practice were meaningfully different before and after intervention in the 3 subjects of instruction (growth monitoring, complementary nutrition and stages of Nutritional Development of child) (paired *t*-test  $P < 0.001$ ). Before intervention, 23% of mothers draw the growth chart of their children by themselves and after the conclusion of the plan it was 100%. The mentioned difference was meaningful by Wilcoxon test ( $P < 0.001$ ).

In assessment of the project effectiveness, changes of social and individual capabilities of the mothers

were evaluated by CIPP Model. Among the cases, it can be pointed to improvement of group dynamic indices of mothers, such as follows:

1) The proportion of participation of each person in the group:

At the beginning of holding instructional sessions, out of one hour of holding the session, plan performer talked about 50 min and mothers talked approximately 8 min on the average and except the plan performer, 20% of mothers talked on the average. In concluding sessions of the plan, mother's talking was increased to 42 min in a session and the number of them who talked had got to 86% of group individuals.

2) Telephone conversation of group individuals with each other:

At the beginning of holding sessions, none of group individuals got in touch with each other by telephone. After holding group sessions, each person had telephone connection with two others on the average.

3) Change of the content of the individuals' talks in the group:

At the beginning of sessions, mothers' talks consisted of getting information, agreeing and showing kindness. In concluding sessions, the content of mothers' talks had been changed to: suggesting opinion, giving information, encouraging other members and asking others opinion.

4) Effect on self-confidence: Presence in the group increased self-confidence of mothers. This matter was specified through analyzing self-confidence standard questionnaire which was filled before and after intervention. The mean grade of mothers was 95.59 before and 105.40 after intervention. This difference was meaningful by paired-*t* test ( $P < 0.001$ ).

5) Willing to solve problems and creativity in life: During holding sessions, 53% of women propounded problems of their life in the group and wanted to solve them.

6) Willingness for learning new matters: Before performing the plan the mean duration of study for mothers on average, was 7 min per day, this time was increased to 15 m. after attending the sessions.

Also 33% of mothers benefited from scientific programs of Radio and TV and scientific books concerning care of children before the plan and this percent increased to 93% after the plan.

In assessing the impact of the project, the effects of plan in nontargeted groups was considered that one of them is as follows:

Before intervention, 9.4% of the participant mothers instructed relatives, acquaintances and neighbors what they had learnt. This was increased to 52.8% after the plan (meaningful difference with Wilcoxon test ( $P < 0.001$ )).

The effects of the program which had continued after intervention (Sustainability) were assessed, one of them was as follows:

One hundred percent of women were willing to continue the activities of the formed group as a NGO.

According to the CIPP Model transportability of the program was evaluated. Possibility of using this participation model of mothers in other regions and for development of other health services, such as family planning, care of pregnant mothers, care of elders were considered by related experts and confirmed.

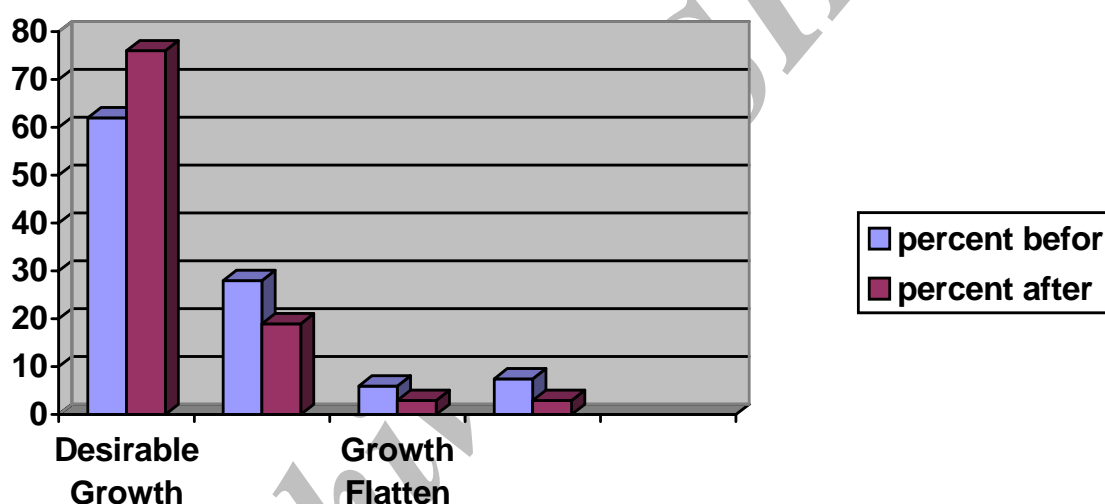


Fig.1: Distribution of child growth in last 3 months (before and after intervention)

## Discussion

The results of this study showed that, in spite of activities at Health System for taking care of children, there were still many children in the region of the study who achieved no desirable growth (10.8%) that conforms with ANIS study (Anthropometric and Nutrition Indicator Survey) results (10.6 %) (1).

Moreover, in assessment of knowledge and practice of mothers concerning monitoring of children's growth, the results showed that the instruction of mothers bears no desirable quality, so that one-third of mothers did not know the growth charts. Two-third of them did not know the aim of growth monitoring and only a small

number could draw growth curve of their children by themselves. All the mentioned cases correspond with ANIS study (1).

In the present study for the purpose of enhancement of mothers' participation a model was applied. The specification of this model and its comparison with community participation programs of other countries is as follows:

1) The implementation of this model brought about a chance to provoke women's participation in the region of the study and engage themselves in instructional activities for taking care of children. The result of this matter was creating a group of volunteer mothers who made effort for instruction of other mothers. This group

even continued their activity in the form of a NGO with the title of "Aware mother, Healthy child". Forming volunteer women groups has been experienced in various parts of the world, including Comprehensive Rural Health project in Jamkhad District in India.

In this project, a women's society was formed in the name of Mahila Mandal. This group of women participated in many activities and had a great role in changing the attitude of people and instruction of correct hygienic habits (2, 3). Formation of women's club in Karnataka project in India caused improvement in the quality of family planning activities in the related region (3). Also in another project to investigate underlying causes for food and nutrition insecurity in black South African households and to gain understanding of the factors contributing to better nutrition security, household organization, gender and intra-household dynamics and social networks were considered (7).

2) Establishing good communication with local health workers and participating them by performers caused their great cooperation in performing the activities of the project which had an important role in continuation of the plan activities.

3) Using teaching methods, special for adult learning, was a great help.

4) As cultural and social characteristics and the Health System of the country have been taken into consideration in the planning of the model, it can be used in other regions of the country and for promoting the quality of other Health Services such as family planning, taking care of pregnant mothers and elders. Developed a participatory research program that is designed to be culturally appropriate, relevant to community needs and interests have been used in other studies like community-based participatory research center to investigate obesity and diabetes in Alaska Natives (10). Also culturally appropriate health education and promotion activities in collaboration with local community organizations, volunteers, and local practitioners were used in oral health promotion program in an inner-city Latino community (12).

5) Besides instruction of new matters, the plan performers talked about self-confidence, self-esteem and how to cope with problems of life that mothers were willing to be discussed about. Having practical application in their life made the instructional sessions attractive for mothers and would willingly participate in the continuation of the plan. In a study done in Indonesia, women's formed a NGO with the title of "Family Welfare Movement" and instances such as self-assistance of society and family solving problems were among the instructional programs (3).

6) The presence of a number of individuals in a group, improved the indices of group dynamic. Cases such as participation of each person in the group; inclination for solving problems and creativity in life were other effects of plan on the beneficiaries of the program.

In this regard, similar results obtained in the Mawas Diri Project in Indonesia. The approach of this study was based on a problem-solving cycle which began with the detection of a problem by the people themselves and went through the steps of identifying solutions, taking actions and evaluating effects on the problems(3).

7) After the completion of the plan, the effects of it which had continued were assessed. A case such as eagerness of group members for continuation of its activity as society of "Aware Mother, Healthy Child" was among the continued effects of the plan.

It seems that presence in the group especially in individuals who have less possibility for establishing communication with other members of the society, such as housewives, can play an important role in social development and enhancement of their self-confidence. Empowerment and partnership theory were considered in other studies like community-based promotion/prevention project operating in Toronto, Ontario, Canada (8). Like many studies in other countries we had no control group in our study, this was because of difficulties in matching of different cultural and social characteristics of other place, but it seems that expanding the achievements of this study had not been related to other factors like medias.

The obtained results showed that the plan has got its aims (including presenting a model for the purpose of enchantment of community participation, improving of the skills for taking care of children and individual and social capabilities of the mothers). This matter shows the efficacy of the used model in the plan.

The present study showed that participation of people in health activities through community participation programs can be used as a method of community empowerment and promotion of the public health. Researchers suggest using specific strategic programs for the purpose of expanding culture of participation with the aim of community empowerment.

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