ORIGINAL ARTICLE

Women's empowerment based on self-regulated learning as mother's ability to fulfill nutrition in stunted children

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ABSTRACT

Introduction: The role of providing nutrition to children aged 6–24 months who are stunted is related to the mother's ability to provide proper nutrition. Empowerment of mothers based on self-regulated learning is a nursing intervention that can be carried out by using the abilities, belief and individual capacities of mothers in completing tasks, managing and providing nutrition to children aged 6–24 months. Mother's characteristic are motivation, self-esteem, self-efficacy, knowledge, belief and ability to decision-making about providing nutrition to children, so it can be a learning process for the mother in using resources which improve the nutrition ability of the mother. This study aims to apply a women's empowerment model based on self-regulated learning in increasing the mother's ability to fulfill nutrition in stunted children aged 6–24 months.

Materials and Methods: The research design used a quasi-experiment. The sampling technique used cluster sampling with 76 respondents in intervention group and 76 respondents in control group. The research was conducted in the working area in Public Health Center, Malang Regency. Data analysis in this study used the Wilcoxon Signed Rank Test and Mann–Whitney.

Results: The results of the study found that there were differences in the ability of mothers to fulfill nutrition in stunted children between the intervention group and the control group (p = 0.000). There were mean differences in the ability of mothers to fulfill nutrition for stunted children before and after the intervention in the intervention group with indicators of breastfeeding, food preparation and processing, complementary- feeding and responsive feeding were increased (p = 0.000). However, in the control group, there were no differences in the ability of mothers to fulfill nutrition with indicator breastfeeding (p = 0.462), food preparation and processing (p = 0.721), complementary feeding (p = 0.721), complementary feeding (p = 0.462). (p = 0.054), responsive feeding (p = 0.465) and adherence to stunting therapy (p = 0.722).

Conclusion: The women's empowerment model based on self-regulated learning is formed by individual mother factors, family factors, health service system factors, and child factors so that it can increase the mother's ability to fulfill nutrition in children aged 6–24 months who are stunted. The women's empowerment is a learning process about breastfeeding, food hygiene, infant and young children feeding, and responsive feeding by mothers to fulfill nutrition in children with stunting, with a goal and plan to achieve an improvement in mother's ability and nutritional status in children.

KEYWORDS:
stunting; women empowerment; ability; nutrition

INTRODUCTION

The role of feeding in the first 2 years of life is closely related to the mother's ability to fulfill nutrition, because at this age children are at risk of experiencing nutritional problems due to transition or weaning and feeding practices of infants, especially in terms of food variety, quality of diet, availability and accessibility, nutritious food, exposure to infection and poor sanitation.[1] In addition, mothers provide food to children based on the child's expressed hunger response, the food menu is prepared based on the wishes of the child and the large use of instant solids is considered more practical.[2] The quality of food and nutrition depends on the mother's ability to feed children aged 6–24 months.[3] Mothers who have a good knowledge influence parenting patterns including feeding, food consumption patterns and nutritional status.[4]

Mothers are part of the family members who have autonomy and a nurturing role in feeding infants and children and are able to make decisions, especially regarding the health of children.[5] Mother's knowledge and skills are needed as a basis for fulfilling child nutrition, mothers must be able to apply parenting in terms of feeding children (responsive feeding) which includes providing food according to the child's age, sensitivity of the mother regarding child's mealtime, creating a good and comfortable.[5] Infant and Young Children Feeding (IYCF) requires a variety of food variations, portions increased gradually, food consistency, and a balanced proportion of macro-micronutrient, including vegetables, fruits, side dishes (sources of animal and vegetable protein) and staple food as energy sources.[6]

Self-regulated learning is a method that can be used by mothers by using their abilities, beliefs and capacities so that mothers' self-regulation, abilities and self-control are more directed.[7] Individual capacities are part of the self-regulated element in which the mother's beliefs and abilities in

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completing tasks, organising and acting on feeding infants and children aged 6–24 months who are stunted are employed to achieve their role in feeding practices so that children's nutrition can be fulfilled.[8]

Efforts and strategies that can be carried out in dealing with the problem of stunting are specific nutritional interventions targeting breastfeeding mothers and children under 23 months of age. Specific interventions that can be carried out are encouraging early initiation of breastfeeding; encouraging exclusive breastfeeding; promotion and education of appropriate complementary foods; tackling worm infections in mothers and children; providing zinc supplementation to children; iron fortification into food/supplementation of micronutrients; prevention and clinical management; administration of complete immunisation; prevention and treatment of diarrhoea; implementation of the principles of management of sick toddlers; supplementation of vitamin A in children 6–59 months; management of severe acute malnutrition in children; and monitoring of child growth and development.[9] In addition, nutritional-specific interventions that can be carried out in stunted and moderately malnourished children are increasing IYCF and improving diet in infants and toddlers with strategies to increase the variety of foods, especially those containing animal protein and fortified milk, giving multiple micronutrients (zinc, iron, vitamins A).[10]

Women's empowerment is influenced by family and environmental factors as well as the resources they have. Support from family, groups and mother's involvement in social activities (e.g., integrated health service) can influence mother's attitude and behaviour. Social participation here is a potential behaviour to transform individuals so they can adapt to the environment.[7] This requires the role of empowering mothers with a self-regulated learning approach in an effort to improve family health, especially for toddlers, so that efforts to improve nutrition for toddlers can be overcome. Empowering mothers with a self-regulated learning approach is carried out by maximising the resources owned by mothers and families where mothers who learn actively as regulators of their own learning process start from planning, monitoring, controlling and evaluating themselves systematically to achieve learning goals, using both cognitive, motivational and behavioral.[5] Good knowledge, positive attitude, mother's autonomy and support from the environment will influence mother's self-esteem and self-efficacy on her ability to fulfill nutrition in children. This is a component that can predict the mother's ability to choose to start providing adequate nutrition.[11] One model that will be developed as a nutritional intervention for stunted children is self-regulated learning by maximising the resources owned by mothers in the family so that mothers are able to carry out self-regulation, especially in carrying out roles in terms of parenting and fulfilling nutrition in children starting from infant and child feeding practices so that problems related to nutrition in children aged 6–24 months who experience stunting can be resolved.[12]

MATERIALS AND METHODS

The research study used a quasi-experimental. The research design was used to compare the effectiveness of the intervention given to the intervention group with the control group before and after the intervention. In conducting the research, the intervention group received standard care from public health centre and was given women's empowerment interventions (used module), while the control group only received standard care from public health centre. The module as a media for women empowerment based on Self- regulated learning SRL) was given in 12 weeks (8 weeks of mentoring, coaching and 4 weeks of independent learning). Every week, mother has done to finished knowledge and ability to improve women empowerment about infant and young children feeding.

This study was conducted among mothers who have stunted children aged 6–24 months in Public Health Center Malang Regency, East Java, Indonesia. Population in this research are mothers who have stunted children aged 6–24 months. Sample in this study was divided into two groups: intervention and control group using cluster sampling on January–April 2023. Sampling technique in this research used randomised (cluster sampling) to recruit the participants with criteria: Inclusion criteria: Mothers aged 20–45 years; mothers who have children two or more, breastfeed their children, cooperative with in complying with agreed activity rules. Exclusion criteria: Mothers was not live at home with children and not prepare food for children, mothers who had only child.

The independent variable in this study was women's empowerment based on self-regulated learning while the dependent variable was the mother's ability to fulfill nutrition in children aged 6–24 months who are stunted.

Retrieval of research data used a questionnaire taken from the modification of infant and young children feeding where the instrument has been tested for validity and reliability. Validity of this research instrument obtained a value of r = 0.367 and the reliability results showed that the Cronbach's alpha result was 0.916 (reliable).

Descriptive analysis for categorical data used the frequency distribution, and for numerical data used the mean, standard deviation (SD), minimum (min) and maximum (max) values. Data were analysed using Wilcoxon Signed Rank Test and Mann Whitney.

Ethical Considerations

Respondents were given informed consent by signing a consent letter as research subjects for interviews and filling out questionnaires, discussions, and observations. Researchers delivered informed consent and explained the research objectives, voluntarism and the ability to understand the information. This study was approved by the Health Research Ethics Committee, Faculty of Nursing, Universitas Airlangga Surabaya no 2574-KEPK in 2022

RESULTS

The research was carried out in the Public Health Center, Malang Regency, East Java, Indonesiawhere this location has 12 villages with a total of 166 children under 5 experiencing stunting out of 5158 children under 5 (3.2%). This research was conducted in two villages with the highest number of

Table I: Test for equality respondent characteristic between intervention group and control group in mother with stunted children (n = 152)

Variable	Group		p- value
	Intervention (n = 76)	Control (n = 76)	
Age of Mother			
17–25 years old	18 (23.7%)	12 (15.8%)	0.440[a]
26–35 years old	36 (47.36%)	32 (42.10%)	
36–45 years old	22 (28.94%)	32 (42.10%)	
Pendidikan			
Elementary school	4 (5.26%)	8 (10.52%)	0,483[a]
Junior high school	16 (21.05%)	8 (10.52%)	
Senior high school	38 (50%)	36 (47.36%)	
Higher education	18 (23.69%)	24 (31.6%)	
Occupation			
Farmer	2 (2.63%)	0	0.569[a]
Enterpreunership	18 (23.69%)	16 (21.05%)	
Housewife	56 (73.68%)	60 (78.95%)	
Age of children			
6–12 month	8 (10.52%)	8 (10.52%)	0.644[a]
12–24 month	68 (89.48%)	68 (89.48%)	
Method of child birth			
Spontan	58 (76.31%)	48 (63.15%)	0.212[a]
Sectio secarea	18 (23.69%)	28 (36.84%)	

[a]Chi square test.

Table II: Differences in mother's ability to fulfill nutrition in children aged 6–24 month

Variable	Intervention group			Control group			Different test		
	Pre Mean ± SD	Post Mean ± SD	p-value	Pre Mean ± SD	Post Mean ± SD	p-value	Pre–pre	Post–post	Δ
Breastfeeding	63.84 ± 9.96	74.63 ± 6.85	0.000	62.63 ± 10.5	64.21 ± 7.83	0.462	0.428	0.000	0.000
Food preparation and processing	64.63 ± 9.76	95.10 ± 5.35	0.000	63.10 ± 9.21	63.84 ± 8.66	0.721	0.450	0.000	0.000
Complementary feeding	71.81 ± 6.22	87.31 ± 6.89	0.000	63.86 ± 8.51	67.52 ± 7.77	0.054	0.000	0.000	0.000
Responsive feeding	66.13 ± 7.63	87.92 ± 7.27	0.000	63.39 ± 8.78	64.84 ± 8.39	0.465	0.196	0.000	0.000
Adherence to stunting therapy	84.97 ± 7.34	96.26 ± 5.63	0.000	81.97 ± 8.61	82.68 ± 8.74	0.722	0.361	0.000	0.000

children aged 6–24 months who were stunted, Petungsewu (16.5%) and Sumbersuko (12.4%) areas.

The following are the results of the test for equality of the characteristics of the respondents' demographic data between the intervention group and the control group before being given the intervention. Assessment of the description of the characteristics of the respondents based on the results of the descriptive analysis is presented in the form of a frequency distribution table in the form of percentage and frequency values, mean values and standard deviations.

Table I shows that the highest proportion of ages in the intervention group is at the age of 26–35 years (47.36%), while the control group has the highest proportion at the ages of 26–35 years and 36–45 years (42.10%). The highest proportion of mothers with high school education (50%) in the intervention group and control group. The highest proportion of mother's work was housewife (73.68%) in the intervention group and control group (78.9%). The proportion of children aged 12–24 months in each intervention group and control group (89.48%).

Mother's ability to fulfill nutrition in children aged 6–24 months who experience stunting before and after the intervention of the women's empowerment model is based on self-regulated learning where the results of measuring the ability of the mother are carried out one month after the intervention is carried out. The following are the results of measuring the ability of mothers carried out before and after the intervention.

Based on Table II, it shows that the average score of mothers' ability to fulfill nutrition in children aged 6–24 months who experience stunting has increased between before and after the intervention in both the intervention group and the control group. From the results of statistical tests using the Wilcoxon Signed Rank Test, it was found that there were differences in the ability of mothers to fulfill nutrition in children aged 6–24 months who were stunted before and after being given interventions with indicators of breastfeeding (p = 0.000), food preparation and processing (p = 0.000), complementary feeding (p = 0.000), responsive feeding (p = 0.000) and adherence to stunting therapy (p = 0.000). Whereas in the control group, there was no difference between the abilities of mothers in children aged 6–24 months who were stunted before and after being given standard interventions with indicators of breastfeeding (p = 0.462), food preparation and processing (p = 0.721), complementary feeding (p = 0.721), complementary feeding

(p = 0.462). p = 0.054), responsive feeding (p = 0.465) and adherence to stunting therapy (p = 0.722).

In addition, other variables contained in this study from the results of the Mann–Whitney test found that there was a significant difference between the mother's ability to fulfill nutrition between the intervention group and the control group, which included breastfeeding practices (p = 0.000), food preparation and processing (p = 0.000), complementary feeding (p = 0.000), responsive feeding (p = 0.000) and adherence to stunting therapy (p = 0.000).

DISCUSSION

Women are empowered to be leaders in the nutrition approach. The nutrition-specific intervention will contribute more to the reduction of malnutrition and lead to a sharper decline in the proportion of stunted children, which can improve the nutrition status directly. In practice, mothers provide food to children based on the hunger response expressed by the child; besides that, the food menu is prepared based on the child's wishes, and the use of instant complementary foods is considered more practical. Mothers are part of the family with autonomy and a nurturing role in feeding infants and children and can make decisions, especially regarding children's health. Mothers' knowledge and skills are very necessary as a basis for fulfilling child nutrition. Mothers must be able to apply parenting in terms of providing food to children (responsive feeding), which includes feeding according to the child's age, the mother's sensitivity regarding the child's eating time, and creating a good and comfortable child's eating atmosphere. Complementary feeding in infant and child requires a variety of food variations, gradually increasing portions, food consistency and balanced proportions of macro-micronutrients, including vegetables, fruits, side dishes (sources of animal and vegetable protein) and staple foods, such as a source of energy.

Maternal autonomy in decision-making is a factor related to maternal empowerment, especially concerning child health. The mother's ability to make decisions becomes a strength in maintaining health and providing household needs so that the nutritional needs of families, especially children, can be met properly. Empowering women or practical mothers with stunted children positively impacts into the children. Previous studies found that women's empowerment in the household is generally associated with children's nutritional well-being and focuses on mothers who have a role to fulfill in the nutritional status of stunted children.[13] Contribution of mother's ability is to access information, mobility, ability of decision-making about child-care, and child health.[14,15] A mother with children under six years, especially infants and toddlers, can screen for the risk of stunting. It is essential so that several ways can be adopted to prevent it. The examples are by providing adequate quantity and quality of food and maintaining the health of toddlers from infectious diseases, especially tracking gastrointestinal infection so that toddlers can achieve a catch-up growth. Then, planning public strategies can help to control childhood undernutrition according to underlying factors. Health promotion about nutritional adequacy, especially responsive feeding, supplementary feeding, or practical feeding from mother to child, may improve children's nutritional status.

Another factor based on family, was influenced by type of family, stress, coping, role and family social support. Families with social functions, barriers, functions, coping, stress, roles, and types in caring for children experiencing stunting have an important effect on empowerment. This is in line with Friedman's (2010) theory that social, economic, environmental, family type, and cultural factors will affect the nursing process. Previous research has shown that family factors can influence children's growth, including family income, parental education, employment status, access to healthcare, and parental health behaviour. Indonesia, especially in Java, still adheres to a patriarchal culture, which places women as people who play a role in child-care, including children's health problems. This encourages women to take care of the household by managing the resources owned by the family, which is the main key to the nutritional status of children. The environment, in this case, the family, is the driving factor in reducing the incidence of stunting. It is because women are empowered independently and can maximise crop livestock production, aiming to meet the nutritional needs of children in the household to reduce the incidence of stunting. Empowerment of mothers can increase the knowledge of mothers and families because stunting is caused by several factors, including maintaining cleanliness by washing hands, which can be done as an effort to prevent stunting.[16,17]

The health service system factor is influenced by health information sources, the role of nurses, the role of cadres, the affordability of access to health service sources where the research results. Promotive and preventive programs in efforts to prevent stunting require an important role from an integrated and sustainable healthcare system. This is because the impact arising from stunting will affect children's development. Health services affect health by prompt handling of health problems, especially nutritional problems. Services that are always ready and close to the community will greatly assist in improving health status.

Child factors are influenced by body weight, history of infection, difficulty eating in children and eating patterns in children. Where, from these factors, body length does not affect maternal empowerment. This is because stunting does not directly affect birth length. The study conducted shows that self-regulated learning-based women's empowerment can influence the ability of mothers to optimally feed infants and children with indicators of breastfeeding, food preparation and processing, infant and child feeding, responsive feeding, and adherence to stunting therapy in children. Infants and children aged 6–24 months need proper food intake to achieve optimal growth and development, especially during the first 1000 days of life. Unmet nutritional needs result in babies experiencing malnutrition, stunting, wasting, not optimal brain intelligence, decreased immune system and problems with stunted growth and development, even death. In infants aged 0–6 months, nutritional needs are met through exclusive breastfeeding. The content of carbohydrates, proteins, fats, vitamins, minerals, cholesterol, vitamin D and fluorine contained in breast milk makes

babies aged 0–6 months get a balanced nutritional intake. Entering the age of 6 months, babies are already getting complementary foods to fulfill their nutritional intake. Digestion is ready to consume complementary foods, so that children can start to be given complementary foods such as biscuits or milk.

After the baby is more than 6 months old, the need for food intake is not only sufficient through breast milk. Complementary food for ASI needs to be given to babies in stages according to the type, quantity and texture according to the baby's age; meanwhile, breastfeeding for children does not need to be stopped until the child is 2 years old. Complementary foods for children can be given to children according to the age of the child where at the age of 6–9 months the child can be given soft or mashed food, at the age of 9–12 months they can be given soft textured foods such as filtered porridge or steamed rice, and at the age of 12–24 months old can be given food with a solid texture where previously it can be started with coarsely chopped food and gradually adjusted to the child's ability until the food menu can be adapted to the family menu.

In introducing breastfeeding to children, within the first 2 weeks it is recommended to introduce porridge and a single fruit with a frequency of 1–2 meals a day. This introduction period is used to introduce variations of carbohydrate sources, vegetable and fruit. In the following week, the child should be introduced to protein, both animal and vegetable protein, and additional sources of fat in the form of refined/filtered porridge given along with carbohydrates and vegetables with a frequency of meals 2–3 times a day and begin to be introduced to snack foods. The principle of this variety of food is the basis for compiling a daily menu so that the macro and micronutrient needs of children can still be met. While the parenting pattern in providing food in this case is responsive feeding. Responsive feeding when feeding, is the child's response with a smile, maintaining eye contact, encouraging positive words, and giving children soft food that can be held to stimulate active self-feeding (finger snacks).

Based on the results of research data analysis, the strength of implementing the SRL-based mother empowerment model in this study is that it has high flexibility in learning as an effort to improve mothers' ability to fulfill nutrition in children aged 6–24 months who are stunted, which can be done anywhere and anytime. The development of an SRL-based mother empowerment model is also supported by Bandura's theory of increasing self-efficacy.[18] The integration of the SRL phase into the mothers' empowerment model can increase the ability of mothers in fulfilling nutrition in children aged 6–24 months who are stunted. Thus, the implementation of the model is one of the recommendations for nursing interventions, especially in the community service providers at the forefront who can carry out early detection of growth disorders in children so that they can be carried out effectively and reflect the maximum ability of mothers in feeding infants and children.

The developed women empowerment based on SRL can be an intervention option, especially in child nursing in the community environment to improve mothers' ability to fulfill nutrition in children aged 6–24 months who are stunted.

CONCLUSIONS

The results of the study found that there were differences in the ability of mothers to fulfill nutrition in stunted children between the intervention and control group. The differences in the ability of mothers to fulfill nutrition for stunted children before and after the intervention with indicators breastfeeding, food preparation and processing, complementary-feeding and responsive feeding were increased.

Women's empowerment factors based on self-regulated learning can directly influence mothers' ability to fulfill nutrition in children aged 6–24 months who are stunted. The application of the women's empowerment based on self-regulated learning has proven effective in increasing the ability of mothers to fulfill nutrition in children aged 6–24 months who are stunted. Improving the ability of mothers to fulfill nutrition can be fulfilled by implementing a model of women's empowerment based on self-regulated learning that is adapted to good resources that come from the mother herself, family, health service facilities and children aged 6–24 months who are stunted. Mothers can take advantage of the resources they have, starting from food, family, information about improving health so that by maximising the resources they have in fulfilling nutrition in children, the child's nutritional status can be achieved properly. Other than that, it can be a recommendation where the role of nurses is as counsellor for mothers who have children with nutritional problems and can be used as an intervention recommendation that can be carried out by community nurses.

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