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Comparing the effectiveness of two interventional methods; lecture-based versus self-learning; on mothers' ability to assess the development of 12-month-old children seeking comprehensive health services centers

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Abstract:

INTRODUCTION: Developmental delay of children is a global health concern. One of the important measures in the care of children and the assessment of children's health is the knowledge and ability of mothers about the condition of their children's development. The purpose of this study was to compare the outcome of lecture-based method versus self-learning package on the ability of mothers to assess the development of their 12-month-old children seeking comprehensive health services centers in Arak city, central province of Iran.

MATERIALS AND METHODS: The present study is a semi-experimental study. The sample included 189 mothers of 12-month-old children. The data gathering tools were age and stages questionnaire with confirmed validity and reliability. The participants in the study were divided into three group as follows: lecture, self-learning, and control group which were evaluated by pretest and posttest. Data analysis was performed with SPSS version 21.

RESULTS: The results of this study indicate that both of interventional methods; lectures and self-learning; had a statistically significant effect on the ability of mothers to evaluate the development of their children ($P = 0.001$). In the self-learning group, the score of the participants increased from 53.35 ± 44.269 to 70.15 ± 47.290 and in the lecture group, the score of participants increased from 55.28 ± 41.268 to 16.14 ± 38.292 according to the posttests.

CONCLUSION: Due to the importance of self-care and active role in the learning process, we suggest the use of self-learning package in practice.

Keywords:

Age and stages questionnaire, development, lecture, self-learning

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Introduction

Developmental delay of children is one of the global health concerns not only in developing countries but also in developed countries.[1] Approximately 15%–18% of children in the United States have developmental disorders.[2] In Iran, this rate varies from 18.7% to 22.5% in different cities,[3-5] that unfortunately half of these disorders are unrecognized tills beginning of school (7-year-old) and left untreated.[6]

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As achieving the capable human resources in the future of the country necessitates paying attention to children as the next generation. It is important to address the issue of children's growth and development, particularly the development.[7] It is also important to note that healthy development in the early stages of life enables individuals to flourish as an adult in various fields such as biological, social, emotional, cognitive, and physical.[8] The neglect or maltreatment of children during this sensitive period can have a devastating effect on their cognition as well as their behavior in the future. Although most children progress in their growth and development in almost similar order and time, the parents and close relatives play a crucial role in their development and preventing delays and consequences.[9] Motor learning is one of the manifestations of behavior which includes a set of sensory, cognitive, and motor processes that happens as an interaction among individual, the environment and the motor task.[10] In the field of motor skills, very sensitive periods are less discussed. The results of the research on children who were severely restricted in early childhood learning experiences confirmed the disorder of these children in fine and gross motor skills, which proves that deprivation during sensitive periods can lead to long-term motor impairment.[11] Despite the importance of early detection of children's developmental delay and necessary intervention, the low use of screening and diagnostic tools is still a dilemma in various societies. Different reasons such as inattentiveness, insufficient payment for implementation, lack of trained personnel, and appropriate testing can explain it.[12] The most important reason for assessing the development of children is that early diagnosis of mental, motor, visual, and auditory disorders can be treated successfully if intervention takes place in good time, otherwise delayed detection and intervention can lead to permanent complications and abnormalities. Studies show that instructing mothers to identify children at risk and as a result, early intervention can prevent many consequences of delayed development and disorders in these children.[13]

In this research, among individual- and group-based methods of health intervention methods, self-learning, and lecture-based methods were selected.[14,15] The lecture is obviously a fast, cost-effective, and time-saving traditional teaching method that can transmit a lot of information to a large group.[15-17] In self-learning tutorial, an educational package for study is tailored to learners 'specific needs, giving them the opportunity to identify, try to learn and fill their knowledge gaps by their own.[18]

As mentioned methods have shown positive outcomes for learners in recent years,[19,20] the importance of growth and development in the early years of life[21] and the role of the mother as the first care provider of the child, it is necessary to equip mothers with enough knowledge and improve their awareness to change their attitude in this field. Therefore, the purpose of this study was to compare the outcome of two methods of lecture and self-learning on the ability to assess the developmental condition of 12-month-old children in mothers referring to comprehensive health services centers in Arak, Iran in 2017, hoping to take a valuable step toward our goal, normal development of children.

Materials and Methods

The present research is a semi-experimental interventional study. The statistical population of the present study included all mothers referred to selected health centers of Arak University of Medical Sciences with a 12-month-old child. To calculate the sample size, the city of Arak divided into five regions, then three regions were selected randomly. From these three areas, each one was randomly selected and assigned to self-learning, lecture, and control groups. The sample size was considered 63 in each group, and totally 189 women participated in the study.

Data gathering tool in this research was a questionnaire of age and age and stages questionnaire stages that was selected among various screening tools due to its standardization. As the study was conducted in Iran, the tool was adapted ($\alpha = 0.94$).[22]

This test evaluates the developmental status of children aged from four to 60 months in 19 different age groups and in five domains of development (gross motor, fine motor, communication, problem-solving, and personal-social) according to calculated cut off points. The focus of this study is on 12 months. For each age group, a total of 30 questions (six questions for each domain) are designed, and the obtainable score for each question is 1–10, and as a result for each developmental domain, 60. This test has a clear and simple language, there is a simple image also that clarifies the questions and makes it easier to use. This test is inexpensive, and it takes only 10 min to complete, and finally, it does not require specialized training to be able to do it.

The researchers for more certainty, re-evaluated the consistency or reliability of the questionnaire in this study based on the calculations which filled the criteria of a reliable questionnaire ($\alpha = 0.8$).

After coordination with Shahid Beheshti and Arak Universities of Medical Sciences, literate mothers of 12-month-old children registered in health centers that care provider is just mother not day-care received a questionnaire for ages and stages in the designated centers. In self-learning group, they were first asked

to complete the questionnaire carefully, and after the pretest, the self-learning package was given to mothers, and they were asked to accurately read it during 2 weeks before doing posttest. They could also call the researcher in case of need to pose their questions, and 15 days later posttest was done at a determined time.

In the lecture-based method, after the pretest, was lecture held for 30 min by using the predefined educational content, another session was held after 1 day and 15 days later all the mothers participating in the lecture did the posttest.

In the control group, pretest and posttest were performed simultaneously with the studied groups. Then, the data were collected and entered in the IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp and analyzed. Considering research ethics, participants were well-informed at the beginning about the goals of the study and they were interested and content with their participation and cooperation in completing the questionnaires.

Results

In this study, 189 women with 12-month-old children participated. Most women (60%) were in the age group of 20–30 years old and had an academic education (70%). From the viewpoint of demographic variables (mother's age, birth order, mother's education, girl or boy child), there was no statistically significant difference between the groups before the study ($P \geq 0.001$).

The results of this study indicate that both self-learning and lecture-based had a significant effect on the ability of mothers to evaluate the developmental domains before and after intervention. In other words, mothers who were trained in lecture and self-learning got a higher score after intervention. As in the self-learning group, the mean score of 35.53 ± 269.44 was increased to15.70 ± 290.47 and in the lecture, increased from 28.55 ± 268.41 to 14.16 ± 292.38 [Tables 1 and 2].

There was also no significant difference between the mean scores of mother's assessment of their children's development in the pretest in the self-learning, lecture, and control groups ($P = 0.779$), but in the posttest, there was a statistically significant difference between all the developmental domains ($P < 0.001$) [Tables 3 and 4]

Table 1: Mean scores of mothers' assessment of their children's development before and after intervention in self-learning group

Variable	Mean±SD		*P*
	Before intervention	After intervention	
The domain of communication	54.12±7.85	58.41±3.21	0.001
Gross motor	53.25±11.64	58.9±3.85	0.001
Fine motor	5500±8.03	58.8±2.79	0.001
Personal - social	52.14±11.24	57.61±4098	0.001
Problem solving	54.92±8.91	57.53±5.52	0.021
Development	44.269±35.53	47.290±15.70	0.001

SD=Standard deviation

Table 2: Mean scores of mothers' assessment of their children's development before and after intervention in lecture group

Variable	Mean±SD		*P*
	Before intervention	After intervention	
The domain of communication	54.76±6.80	59.36±2.45	0.001
Gross motor	50.79±13.11	57.14±6.33	0.001
Fine motor	56.74±5.61	58.73±3.35	0.004
Personal - social	52.30±7.23	58.65±3.26	0.001
Problem solving	53.80±8.50	58.94±4.72	0.001
Development	41.268±28.55	38.292±14.06	0.001

SD=Standard deviation

Discussion and Conclusion

Due to the vulnerability of children in society, sufficient health care, especially in the first two years of life is vital. One of the important measures in the care of children and the assessment of children's health is the knowledge and ability of mothers about the condition of their children's development. If the mother can monitor and evaluate the child's growth and development, she would have a great influence on the development of the child and the future generation.[21]

It is also important to note that healthy development in the early stages of life is the basis for enabling individuals to lead a flourished life in various areas, including social, emotional, cognitive, and physical well-being.[7] The 1st years of life, especially the first 3 years of life,[22] can be regarded as an important time for brain development and therefore an opportunity to attain the ideal level of development of the person in different dimensions. The 1st year of life is more important because the pace of growth and development in the 1st year of life is higher than ever in the human lifetime, and any procrastination in this regard is irreversible. The neglect or maltreatment of children during this sensitive period can have a powerful impact on the cognitive ability as well as their behavior in the future. Therefore, the developmental evaluation of a 1-year-old child can reflect the upcoming condition and it can reveal shortcomings that can be prevented by early intervention. Therefore, it is necessary to monitor the developmental status of these children to be able to treat and provide parents with the required information in related cases. In this regard, this study was designed to determine and compare the

Table 3: Mean scores of mothers' assessment of their children's development before intervention in self-learning, lecture-based and control group

Variable	Mean±SD			*P*
	Control group	Lecture group	Self-learning group	
The domain of communication	54.12±7.85	54.76±6.80	54.68±6.46	0.860
Gross motor	53.25±11.64	50.79±13.11	53.33±8.47	0.356
Fine motor	55.00±8.03	56.74±5.61	55.71±6.14	0.339
Personal - social	52.14±11.24	52.30±7.23	53.25±8.33	0.760
Problem solving	54.92±8.91	53.80±48.50	54.84±6.08	0.681
Development	44.269±35.53	41.268±28.55	82.271±21.74	0.797

SD=Standard deviation

Table 4: Mean and standard deviation after instructing of all three groups of self-learning, lecture-based and control

Variable	Mean±SD			*P*
	Self-learning group	Lecture group	Control group	
The domain of communication	58.41±3.21	59.36±2.45	5500±6.77	0.001
Gross motor	58.09±3.85	57.14±6.33	53.65±8.66	0.001
Fine motor	58.80±2.79	58.73±3.35	55.23±7.26	0.001
Personal - social	57.61±4.98	58.65±3.26	53.96±7.08	0.001
Problem solving	57.53±5.52	58.49±4.72	54.92±6.50	0.001
Development	47.290±15.70	38.292±14.16	77.272±20.15	0.001

SD=Standard deviation

effects of two interventional methods of lecture-based versus self-learning on the ability to assess the state of development of 12-month-old children in mothers.

The results of this study indicated that there was no significant relationship between the level of mother's education and the ability to assess children's developmental status, like the results of Kruitbosch and Heijmans that studied the effect of mother's education level on malnutrition status in children under the age of 5 in Uganda that showed that the level of mother's literacy had no effect on the nutritional status of their children.[23]

The result also indicated a significant difference between the self-learning and lecture in comparison to the control group at the error level of 0.01, which means the effectiveness of each of these two methods without significant difference between the self-learning and lecture-based groups.

In other words, mothers who have been trained in lecture and self-learning have improved their score after intervention, but there was no significant difference between the two Interventional al methods. The results of this study showed that both self-learning and lecture-based methods are effective on the ability of the mother to assess the child's developmental situation.

Sherman also found that in 2010, there was no significant difference between the cognitive knowledge of those who were trained in blended versus those trained in the traditional way or the lecture learning.[24] In this context, Soper in their study in 2016 in Florida, compared three lecture, self-learning and e-learning courses to 87 nurses, the results showed that all educational methods are equally effective for gaining knowledge. The only different is cost and time.[25]

Golshiri *et al*. also launched a research to see the role of mother's participation in changing their performance in the field of child growth and nutrition in Isfahan city in 2003–2004. In Golshiri study, the mean of total knowledge scores before and after the intervention was 23 and 34, respectively. The mean score of their performance before and after the intervention was 47.3 and 60.2, respectively. The increase in mean scores was significantly higher than before the intervention.[26] In another study, Baghernezhad-Hesari *et al*. compared the effects of two lecture and self-learning methods on knowledge and performance of mothers about the developmental process and the stages of nutritional development in children <3 years old. In Baghernezhad-Hesari *et al*. semi-experimental and prospective study, 100 mothers aged 25–30 with children under the age of 3 years participated and the results showed that the average scores of mother's knowledge about the stages of nutritional development of their children in lecture and self-learning groups before and after intervention was 66.30 and 34.33, respectively. Three months after the intervention, the mean score of knowledge in the lecture and self-learning group about the stages of nutritional development was 96.33 and 80.33, respectively. Furthermore, the mean of performance scores in the lecture and self-training group before intervention were 45.00 and 44.27, respectively, after intervention, were 77.91 and 88.66, respectively, indicating the effect of

education on increasing the awareness and performance of mothers for nutritional development of children under 3 years of age.[27]

Finally, the results of this study showed that both self-learning and lecture-based methods are effective on the ability of the mother to assess the child's developmental condition. However, due to the importance of self-care, shortage of human recourses, their availability, and importance of the active role in the learning process, the use of self-learning curriculum is suggested in this research.

Self-learning package was perceived to be more effective in learning independence more than lecture method and also in the achievement of mother's intended learning outcomes.

Ultimately, it is suggested that longitudinal studies be presented to evaluate the status of the development of infants and children at regular intervals and in other age groups, and to compare the results. Regarding flexibility and benefits of modern educational methods (e-learning, especially social networks) that can be used at any time and anywhere, as well as lower costs, more extensive use of these methods is recommended in future studies.

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Conflicts of interest

There are no conflicts of interest.

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