

Can Children Enhance Their Family's Health Knowledge? An Infectious Disease Prevention Program

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Abstract

Objective: The purpose of this study is to propose an innovative method of knowledge transfer that aims to improve health literacy about pediatric infectious diseases prevention in families. Children have an appreciable role in this scheme.

Methods: This study is a before and after trial that has been conducted in Hamedan in 2009. After changing seven infectious disease topics into childish poems, we selected five kindergartens randomly and taught these poetries to the children. Teaching process held after a pretest containing 24 questions that examined 103 of parents about mentioned topics. The same post-test was given after 4 months of teaching process.

Findings: The mean of correct answers to the pretest was 59.22% comparable with 81.00% for post-test ($P < 0.00$). Gender and knowledge degree could not change the results significantly. Assuming one's correct answers to the questions as his/her Knowledge Mark, the mean of this variable increased to 5.32 by this method.

Conclusion: This cost-effective and joyful method had successful results in promoting health knowledge. Children are able to play an active role in family's health situation. Learning within family atmosphere without any obligations makes our scheme a solution for paving the knowledge transferring way.

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Introduction

Promoting health knowledge is the target point of health education programs. Pursuing the goal of improved health literacy requires more alliances between health and education sectors to improve literacy levels in the population^[1]. It is important for health educators to know about Knowledge Transfer to meet their needs in transferring their knowledge to

public. Knowledge Transfer, which means the synthesis, exchange and ethically application of knowledge within a complex system of relationship among researchers and users, has become one of the recent priorities in research centers^[2]. The word 'user' contains researchers, policy makers and public members^[2].

The method of knowledge transfer, apart from its characteristics, requires active interactions between researchers and users^[3]. Caplan proposes the two-

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communities theory indicating a gap between researchers and policymakers, whereas these days another gap has been formed between researchers and other users^[4]. In addition to illiteracy in developing countries that hampers effective health education, there are multitudes of non-medical specialists who do not have enough information about daily health affairs, and this lack is more remarkable in countries that welcome immigrants. Immigrants often have significant language and health literacy difficulties, which are further exacerbated by cultural barriers^[5].

Alongside with sophisticated methods like computer and internet, using simple methods help us bring to achieve our health goals^[6-8].

Also, the lack of health literacy needs more attention when it is manifested in caregivers. It is believed that some of the undesirable health outcomes in children are because of inadequate health knowledge among caregivers. In the USA, one in five caregivers of young children has low health literacy^[9]. Therefore researchers have considered different methods to come up with this deficiency by having children to cooperate in their health programs.

Children have been considered in advancing creative methods repeatedly. In 1992 a research group in India endeavored to transfer knowledge on leprosy in cooperation with children and informed their parents through them^[10]. Jacob et al (1994) started conducting a similar research that yields promising results^[11]. Rimal and Flora (1998) express that parental dietary behavior is partially affected by children^[12]. The findings from studies in this field have encouraged other experts to apply similar methods to conduct their research projects, Allahverdi-pour and Bashirian, Onyango-Ouma and Mwangagain from the influence of children in order to teach different parts of their society^[13-16].

Despite the researcher's trends in using novel methods in this field, none of them have used childish poem as a medium for knowledge transferring. In this study, we try to raise families' health knowledge about infectious diseases by a method that uses children as health agents. Infectious diseases are still the leading cause of mortality in children less than 60 months in developing countries^[17]. Juvenile age is accompanied by learning childish poems, which can be sung continuously at home and potentially become as part of both children's and parents' memories. We decided to transfer health knowledge to families through altering this information to childish poems and teaching children at kindergartens. In this method, knowledge is transferred without any obligations. The outcome of transferring health knowledge through childish poems has been assessed in this study.

Subjects and Methods

In this study, we use the method of interventional pre and post series to conduct our research. The proposal of this non-invasive project was approved by the Research Committee of Hamadan Medical University in January 2009. It was also accepted by Hamadan Welfare Organization, which is the responsible organization of kindergartens in Hamadan. Our methodology is briefly explained as follows. At first, a sub specialist in pediatric infectious diseases provides seven short texts about health and common pediatric infectious diseases prevention. Then, a poet transfers these conceptions to childish poems for the first time (Appendix 1&2). In the process of preparing an accurate questionnaire, at first 30 questions with three choices of "true", "false" and "do not know" were made, but 24 items of those are confirmed as valid questions by two experts of health education and infectious diseases. To assess the reliability of the questionnaire a pilot study on a 40 participant sample was performed and Cronbach's alpha of the questionnaire was determined as 83 percent. We accepted only the correct answers and gave one mark to each. No mark was given to incorrect or "do not know" answers. Thus the expected maximum mark was 24 and the minimum expected mark was 0. In addition, we defined Knowledge Mark (KM) as a parent mark in both the pre-test and/or post-tests.

Among 35 kindergartens in Hamadan, we selected 7 kindergartens by simple random method. The parents (either father or mother, the one who is responsible to take her/his child) of all five to six year old children of the selected kindergartens are asked to participate in the survey and a verbal consent is obtained from those who accepted.

We excluded the following children from our sample: those whose parents are physicians, nurses, health-care workers, and those children whose parents work at the kindergarten (exclusion criteria).

We asked the parents of the sample survey to participate in a pretest by answering to a questionnaire when they are in the kindergartens. Also, they were asked to come to the kindergartens personally one more time when it is required (to answer to the post test). Then, we asked our kindergarten tutors to teach children seven musical poems about hydatid cyst, antibiotic misuse, botulinum toxin in home-canned foods, dysentery, the importance of sixth tooth, brucellosis and tetanus. In this step, children were not allowed to take home these texts, but they were asked to sing the poems at home and want their parents to re-write the poems on a paper and give them the papers to take to the kindergarten. The teaching stage took

between three to four months. During the next stage, parents took a post-test survey with the same 24 questions. Parents of 115 kids participated in the pre-test and 103 of them completed the post-test. Statistical analysis is done on 103 who completed both tests by paired T-test. We used SPSS version 11.5 to analyze the data.

Findings

The sample data consists of 103 parents who provided solutions to both the pre- and post-test question survey. Of the participants 77 were female and 26 male. From the level of education point of view, 19 were below high school diploma, 45 had high school diploma, 8 had Associate degree, 27 had BA, 3 had MA, and 1 had PhD. The results of the survey show a significant difference between the correct answers in both pre-test and post-test stages (Fig. 1).

Table 1 shows the mean of the correct answers in the pre-test stage is 59.22 while the same figure for the post-test step is 81 ($P < 0.001$). In addition, we define Knowledge Mark (KM) as a parent mark in both the pre-test and/or post-test stages. The mean KM shows a significant increase (5.01) from 13.62 in the pre-test to 18.63 in the post-test (Table 2).

The difference of KM promotion among females and males was not significant (21.61 ± 20.17 in males and 20.3 ± 31.61 in females, $P = 0.8$). The KM was increased to 19.93 ± 25.06 among parents who at most had high school diploma and 23.47 ± 20.84 among parents with upper educational levels ($P = 0.5$).

Discussion

Health has been the concern of poets such as Fiona Sampson for years, however, these poems never had educational purposes^[18].

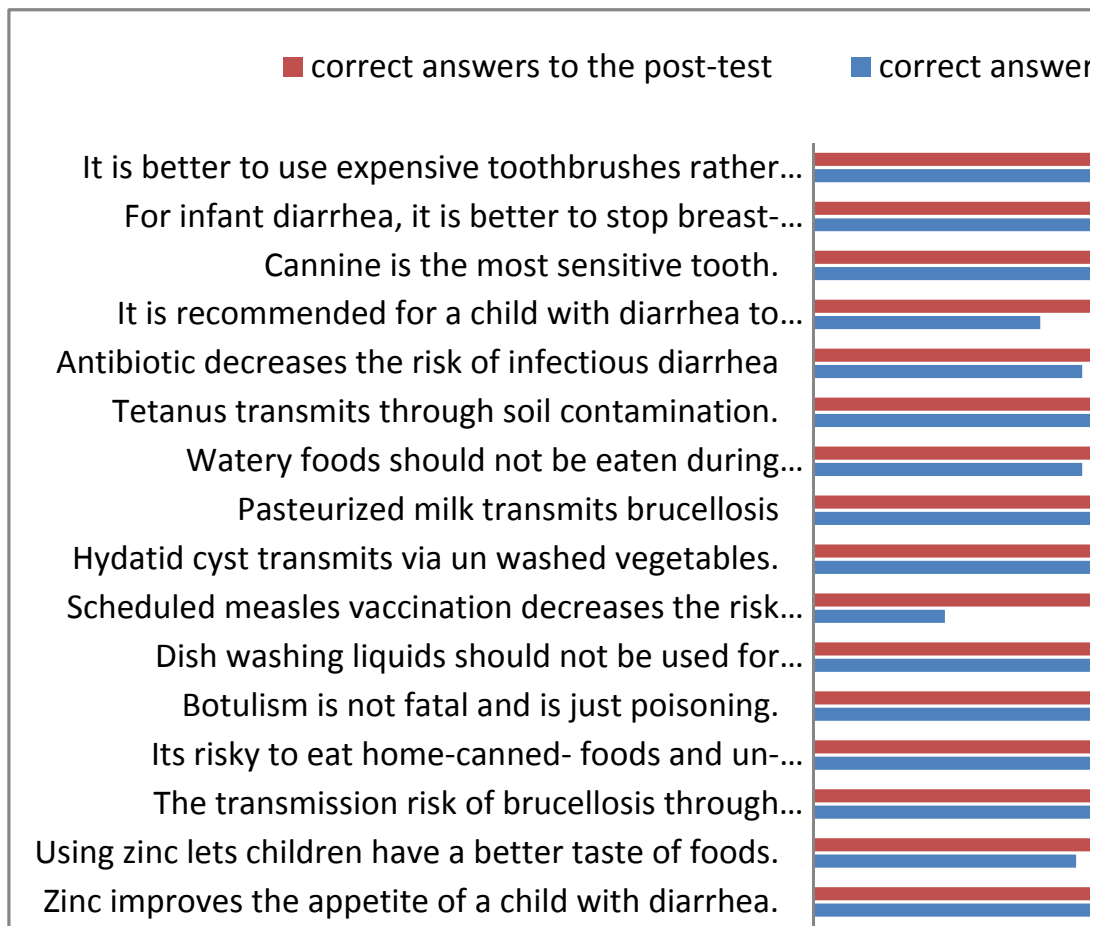


Fig 1: The frequency of correct answers to the tests

Table 1: Mean percent of correct answers to pre-test and post-test categories

Subjects	Mean (SD)		P-value
	Post-test	Pre-test	
Hydatid cyst	51.21 (30.59)	78.88 (25.42)	< 0.001
Diarrhea	44.98 (22.35)	73.35 (24.86)	< 0.001
Sixth tooth	69.9 (31.14)	88.03 (21.82)	< 0.001
Botulism	67.64 (35.07)	85.44 (22.22)	< 0.001
Brucellosis	85.11 (26.29)	89.97 (18.57)	0.083
Tetanus	84.47 (36.40)	97.09 (16.89)	0.002
Total	59.22 (19.67)	81.004 (15.64)	< 0.001

Analyzed by Paired T-Test
SD: Standard Deviation

The results of this study confirm our hypothesis about the role of children in raising family's knowledge on health. The results show that neither gender nor the grade of knowledge degree (below and upper high school diploma or below and upper BA) affect answers. Therefore, people with different educational status have received the information similarly implying that this method can be extended to general cases in a straightforward manner.

Fig. 1 shows that the percentage of correct answers has increased in 23 out of 24 questions. The percentage of correct answer to post-test has decreased only in one item (item 11) which compares the risk of brucellosis transmission via unpasteurized milk and yogurt. Although the term yogurt has not been mentioned directly in the related poem, but there is a hint about boiling mechanism and we expect that the audience discover the answer by logical thinking about the necessitation of boiling milk for preparing yogurt. The decrease in answering is 2 percent which is not significant; however, it shows that it would be better to mention the conceptions directly in these types of poems in order to avoid any misconceptions.

Moreover, the percentage of correct answers to the questions of selected topics in pre-test and post-test has been compared (Table 1) and shows that parents have done better in post- test about all topics except one. The difference of correct answers to the questions about brucellosis does not show a significant increase in post-test. This finding is probably due to higher basic knowledge about brucellosis among parents. In other words, parents

have had acceptable information about brucellosis even without our educational program, so we observe lower contrast between pre-test and post-test about brucellosis.

It should be taken into consideration that brucellosis is an endemic disease in Hamadan and people have been educated in different ways about this disease in recent years.

Although the lowest contrast between pre-test and post-test correct answers belongs to a question about botulism, the overall assessment shows that parent's knowledge about this topic has been promoted significantly ($P < 0.001$, Table 1).

The significant difference between the pre-test and post-test KM, based on the results of Table 2, is the sign of successful knowledge transfer through childish poems.

Mosavel utilizes adolescent daughters to provide their non-indigenous mothers with health information^[19]. The researcher's method is impressively successful; however, the fact that he mentions that some mothers cannot distinguish the semantic difference between *information* and *advice*, needs serious attention. In addition, since daughters may misunderstand the information, it would be probable to transfer the misconceived information to their mothers and this fact threatens the successfulness of study in applying. While, in our study; firstly, childish poems do not imply sententious, secondly, if the poem is sung wrong, the disturbance in rhythm will be appeared, so the information which is transferred through poems is not at risk of alteration.

Table 2: Mean of Knowledge Mark in pre-test and post test

Test	Participants	Mean (SD)	P-value
Pre-test	103	13.62 (4.54)	< 0.001
Post-test	103	18.63 (3.59)	

Analyzed by Paired T-Test

In Evans research, also, transferring knowledge to parents is performed through children[20]. Parents get familiar with educated topics with the help of their children in homework assignments designed for asthma management, and are taught about asthma indirectly. The advantage of our study in comparison with Evans' is that in Evans method Knowledge Transfer brings to bear via homework assignment, while in our study there is no obligation for doing home works, and parents are educated while enjoying their child's singing.

On account of the fact that making communication with younger children is not as difficult as with adolescents for parents, we are sure that knowledge transfers within a family through a continuous and friendly communication will work.

Christensen expressed the importance of children's role in promoting the family health status[21]. In his article, he emphasized on the activities that children can perform to enhance their health and promote their family health situation via the health efforts for themselves. We showed that children, additionally to what Christensen mentioned, are able to affect their family's health status directly. They can improve their family's health as little teachers in health. It should be taken into consideration that the limitations of this study was the impact of other media on participant's knowledge, which was not preventable. One of the acceptable results of this survey was publishing the poems as a book for children which was republished and welcomed by public.

Conclusion

This study's results suggest that health knowledge transfer to families through childish poems is an applicable method that has many advantages. By applying this joyful, cost-effective and easy-to-use method, we will be able to introduce new health topics to families.

However, it should be taken into consideration that this method is applicable for families with trainable children, for teaching in larger scales more general ways should be added to this method. Moreover, the simplicity of poems and expressing the topics in a less elaborative form are the key factors that affect the successfulness of this way.

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Conflict of Interest: None

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