

The effect of the virtual baby simulation in pediatric education

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Abstract

Aim: The virtual innovation is offered the new opportunities rather than teaching didactic content in pediatric nursing. The aim of the study was to examine the effect of the VBAP simulation on the emotional development with students in pediatric nursing education.

Material and Methods: This study utilized an experimental design with a pre- and post-test with 52 nursing students (24 for experimental and 28 for control groups). The Virtual Baby Adopter Program (VBAP) simulation used as an intervention on own mobile phone for experiment groups. The experiment group used the VBAP simulation program daily belonging to proper the plan for baby feeding and care applications for 80 days.

Results: There was significant between experiment and control groups' participants living of children levels in post-test scores. The experiment group' level of the bonding is a strong and they felt positive emotion as loving, joyful, and protective. The experiment group' level of the caregiver strain is a low.

Conclusions: It is observed that the virtual program in pediatric education is a way to effect that developed for participants liking of children as a strong emotion of bonding and low caregiver strain.

Keywords: Bonding; liking of children; the virtual baby program simulation; pediatric education.

INTRODUCTION

The pediatric education begins with a didactic knowledge of the principles of children growth and development for the undergraduate students (1-3). The clinical pediatric content in currently pediatric education is to connect between the didactic knowledge and children care (4,5). The undergraduate students attending universities have little experience of caring for normal children since they do not have their own children yet. The aim of the pediatric education is to ensure that young students develop positive attitudes towards children. The pediatric education also would influence emotion and understanding of the students, about taking care of a small baby and contributing to its emotional development which are insightful phenomena that develop over time (1). In literature, the use of virtual learning environments in nursing education makes the goals of the pediatric lesson achieved within emotional development and learning activities (3,6). The virtual have greatly expanded the opportunities available to use

content focused on children care in pediatric nursing (6,7).

Since youngsters are pretty much interested in the technological developments, they are able to use tech applications such as virtual reality and enjoy these applications. Therefore, based on the enthusiastic side of technology, learning outcomes of youngsters/students can be improved through offering the use of virtual in pediatric nursing education (8). According to the last researches it's suggested that the best learning for students is the learning activities with incorporates emotion (3,6,7,9).

As a caring profession, nursing and children development can use to develop sense of children caring for virtual as a model of professional caring practice (10). The Institute of Pediatric Nursing (IPN) identified that the pediatric nursing content was a significant concern for pediatric nursing leaders in education and practice in 2010 (5). Student pediatric perspectives in the future pediatric education are important to study because their perspectives of the virtual are not always consistent with perspectives of

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pediatric education leaders (6,7,10). The aim of the study was to examine the effect of the Virtual Baby Adopter Program (VBAP) simulation on the emotional development with undergraduate students in pediatric nursing education. The aim also was to project the undergraduate students' perspectives of the virtual children care as a liking of children, caregiver bonding and caregiver strain.

Children care concept, especially sick children is related which the level of liking of children, caregiver strain and caregiver are bonding (5,11). There are no studies directly addressing the liking of children on pediatric education in the literature, despite the fact that students taking pediatrics course are the people most frequently in contact with children while providing care. Thus, the high level of children liking of caregivers effects the mental health of children in a positive manner (12). Many researches in this area have focused on the caregiver love, which has been defined as a bonding force (12-14). Other context as a caregiver strain stress is described emotional responses by primary caregivers. It is revealed in this term that there is a mutual relationship between the caregiver and the care recipient (15,16). In literature, there are a lot study in child care cause strain of the parents (11,17). Including data that examine support systems, caregiver personality traits, and coping strategies, help to gain a better understanding of how caregivers are affected by a child. This data have demonstrated a negative correlation between high levels of parental stress and positive parent-child interactions (11). It was showed that stress in the parenting role affects the well-being of both children and their caregivers (11,17).

The virtual nursing courses that fast transformed quality of education has occurred at universities (such as, University of Wisconsin, University of Louisiana) in last decades (10,18,19). As pediatric leaders look for innovative teaching strategies to deal with challenges in nursing education, virtual environment offers great potential. These virtual strategies also can be used to help nurses prepare to assume pediatric caregivers roles in virtual involving infants and children (5,6,19). Children care concept including virtual strategies for the level of liking of children, caregiver strain and caregiver bonding need to discuss in pediatric nursing education. The purpose of the study was to examine the effect of the VBAP simulation on the emotional development with students in pediatric nursing education with nursing students.

MATERIAL and METHODS

Design and Sample

This study utilized experimental design with a pre- and post-test after intervention and comparison group (without intervention). The study was conducted in Hatay, between the dates of 5th December 2017 and 28th February, 2018. The sample of the study included 52 students (nursing students and children development students) in total (24 for experimental and 28 for control groups). The inclusion criteria in this study were as follow: being had phone to use baby adopter program: being knowledge about new-born before in this time for 6 weeks: being continued

didactic knowledge in pediatric education for 8 weeks: being consented. Ethic committee approval was obtained from the Mustafa Kemal University in Turkey (2017/138). Baby adopter program own accepted in this study. The researcher has received permission from the program producer as an e-mail. The nursing students gave their consent to participate in this study also.

The Baby Adopter Program Protocol

The Baby Adopter Program is a game for people who love to take care of little babies. The goal of the program is adopt and take care a new-born. The baby have to feed when it is hungry for the baby has to be with energy equivalent of 30. In the other hand the baby may get sick, if it is not feed. The baby will respond with sounds on tap on the main screen. The baby can grow after 100 days of age (after acquiring clothes and shoes). Need to wait at least 1 hour after feeding to get points again for feeding. Participants earn 5 points for each care taken action but participants wait at least 4 minutes between care actions to get points again. Karma points in the program represents participant' overall game progress and participant experience.

Participants were took new-born education that it is primary in pediatric education by researcher for 6 weeks before they were to start the program. All of the participants were continued didactic pediatric education 10 weeks by researcher. The experiment group installed the program on own mobile phone for in 1 week. The experiment group was also used the VBAP simulation for 80 days. The plan that is new-born life as a feed and take care was improved by researcher. Participants used the program daily belonging to proper the plan. Participants need to use this game 5 times a day, like a real baby, for baby feeding and care applications so that they can apply the baby care on this plan. It is suggested the plan to participants:

- Recommended feeding menu daily: protein, carbohydrate, drink, fruit, and dairy products.
- Recommended take care daily: sleeping, bath, play, dressing, health, and love.

Data Collection

Socio-demographic information forms were used for participants. Socio-demographic information form includes 3 questions for control groups (age, number of siblings, the status of marriage, and the department) and includes different 2 questions for experiment groups (baby age and karma points).

All participants were applied Barnett Liking of Children Scale (BLOCS) that BLOCS' data were collected by two tests: 1 day (pre-test) and 80 day (post-test) (Figure 1).

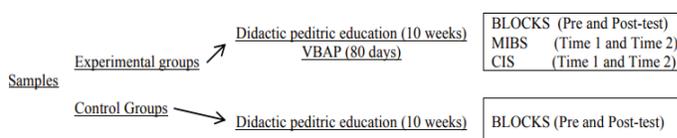


Figure 1. Study dizayn

Experiment group participants were applied Maternal to Infant Bonding Scale (MIBS) and Caregiver Strain Index (CIS) 2 times for evaluation of the program process. The questionnaires (MIBS and CIS) were filled out by the participants Time 1 (The virtual baby age: 4-12 days) and Time 2 (The virtual baby age: 68-80 days) (Figure 1).

Barnett Liking of Children Scale (BLOCS)

Barnett's Liking of Children Scale (BLOCS) is a measurement tool that had been developed to assess individuals have a favorable attitude toward children by Barnett and Sinisi (20). A validity and reliability of the scale has been determined by Duyan and Gelbal (21) in Turkey. The reliability of the scale revealed an internal consistency of .92 and the variability of the scale was 51.83% as a factor analysis. There are 14 items of a 7-point Likert-type scale ranging from "strongly disagree" to "strongly agree". The 4 questions (3, 6, 10, and 13) have in reverse. The scale scores are range between 14 and 98 points as a high points indicating that people like children more.

Maternal-to-Infant Bonding Scale (MIBS)

The Mother-to-Infant Bonding Scale (MIBS) is an instrument to assess mother-infant bonding by Taylor, Atkins (12). The scale was translated and validated in Turkey by Aydemir and Alparslan (22). The Cronbach Alpha confident in the scale were found to be .695 in one day and .863 between the 8-12 weeks after the birth. The scale has internal compliance were found as a Cronbach Alpha .62- .69. The MIBS consists of 8 items with a 4-level scale ranging from 0 to 3. A final summary score range between a min of 0 and a max of 24. A higher scores indicate very weak bonding.

Caregiver Strain Index (CIS)

CIS, Robinson (23) achieved a Cronbach's Alpha value of 0.86 during the reliability study (23). It is Turkish adaptation (15) was found to be valid and reliable (Cronbach's alpha= .73). The validity of the CIS was found to be 0.41 and the index' test-retest reliability 0.75. This scale that comprised

of 13 items are reached by summing 0 and 1 responses. The scale' accounted 7 points or more indicates a high level of stress and the subjective care load as perceived by the caregiver.

Data analysis

The data obtained from experimental and control groups were entered into the software. Statistical program used for statistical assessment. The distribution of the dependent variable in the universe is accepted to be normal as a Kolmogorov-Siminov test. In order to evaluate the efficacy of the program re-tests scores of experimental and control groups were measured by independent T-test and Paired Samples T-test. The correlation coefficient between independent variables accepted as continuous were examined and the nonparametric Spearman's rho correlation test was utilized. Statistical significance was set at 0.05.

RESULTS

In this study' participants were 52 students as the nursing students and the children development students. The experimental groups were 24 participants, and other control groups. The mean age of participants were 20.25 ± 1.49 , and the mean siblings of participants were 3.6 ± 1.76 . There were no significant differences between groups in relation to age and siblings number ($p > 0.05$).

The comparisons pre- and post-test scores of participants' BLOCS shows at the Table 1. There was no significant between experiment and control groups' participants living of children levels at pre-test ($t: 48.284, p = .093$). However, a significant differences was obtained in post-test scores in favor of experimental group ($t: 49.946, p = .038$). It was no found correlation between participants' sibling and participants' BLOCS scores at pre and post-tests.

The experiment group' level of the bonding is a strong (Time 1 $x = 3.42$, Time 2 $x = 4.04$) (see detail Table 2), they felt positive emotion as the MIBS' sub-groups (Loving, Joyful,

Table 1. The distribution of pre- and post-tests scores of participants' BLOCS

BLOCS	Groups	n	x	SDs	SE	p
Pre-test	Experiment	24	89.04	7.62	1.556	0.093
	Control	28	86.75	10.83	2.048	
Post-test	Experiment	24	86.88	8.41	1.717	0.038*
	Control	28	80.57	10.17	1.923	

Independent t-test. * $p < 0.05$.

Table 2. The distribution of 1. and 2. Time scores of experiment groups' Tools

Tools	Faz	n	x	SDs	SE	p
MIBS	1. time	24	3.42	2.93	.599	0.143
	2. time	24	4.04	3.11	.636	
CIS	1. time	24	2.75	2.19	.447	0.159
	2. time	24	2.13	2.23	.456	

Paired Samples t-test. * $p < 0.05$.

and Protective). As seen in Table 2, while there was no significant difference between time 1 and time 2 in the experiment group' MIBS ($t: -1.518, p = .143$). A similar pattern was observed with the experiment group' CIS scores ($t: 1.457, p = .159$). The experiment group' level of the caregiver strain is a low (Time 1 $x=2.75$, Time 2 $x=2.13$) (Table 2).

DISCUSSION

The pediatric education environment, not only didactic education and clinic practice but also especially the basic care and liking of children should develop at the same time (2, 9, 21). A study carried out by Crane and Brown (24) focuses on the human services undergraduate students' attitudes and empathic behavior toward children, knowledge and skills about child care, the students' parenting attitudes, and their play therapy attitude. The results revealed the undergraduate students in the course had significantly better scores as the BLOCS (24). In another study, it was found that pediatric nurses in Turkey, have an average of scores (83.67 ± 15.37) about liking of children (21). A similar average of liking of children in our study found that 87.81 ± 9.472 is high, and significant differences were obtained in post-test scores in favor of experiment group ($p < 0.05$). This study has shown that the proposed the VBAP simulation intervention had a positive impact on the sample of nursing students and child development students on their liking of children, and improve the quality of the pediatric education environment.

The importance of early human relationships, especially with primary caregivers, is important for the cognitive and behavioral development of infants. The need for caregiver love in infancy and childhood is important for mental health (12). Persico, Antolini (14) found MIBS mean scores between 1.28 and 1.96 with 168 women in 3 months after birth. As a similar pattern, the samples' level of the bonding in our study is a strong (Time 1 $x=3.42$, Time 2 $x=4.04$) in 3 months after to use the virtual baby adopter program. Taylor, Atkins (12) data' showed average bonding scores at 12 weeks were lower than those recorded at 3 days. Some other studies have revealed difficulties in mother-to-infant bonding as the mode of delivery, breastfeeding, unplanned C-sections (13,25). In our study data' shown that there was no changed bonding scores between Time 1 (The virtual baby age: 4-12 days) and Time 2 (The virtual baby age: 68-80 days) ($p > .05$). The VBAP simulation is a positive effected on bonding by caregivers. The power of our study is that the samples felt positive emotion as a loving, joyful, and protective that is like real by means of to use the virtual baby adopter program.

Caregiver strain is a term used to describe social, economic, physical, and emotional responses that can be experienced by caregiver (15,16). It is known that difficulties in child care cause strain of the parents. A study provides show that regardless of a child's medical history, the intervention significantly improves caregiver stress and child outcomes (11). Another study, the mothers of children with cerebral palsy were found to be significantly

more care strain stress than the mothers of children with mentally retarded children (17). The term in our study is also very important to evaluate the participants for the virtual baby adopter program. It was shown that our samples' level of the caregiver strain is a low (Time 1 $=2.75$, Time 2 $=2.13$) and there is no changed the caregiver strain scores between Time 1 and Time 2 ($p > .05$). The VBAP simulation has not caregiver strain to participants for in this process. In the other hand, the program is very useful the participants in pediatric education.

As pediatric leaders look for innovative teaching strategies in pediatric context, virtual environment offers great potential. VBAP simulation as one of them has potential that nursing students are supporting availability of the emotional development in pediatric education. Nursing students' emotional development context by the way in this virtual program, is discussed as the level of liking of children, caregiver strain and caregiver bonding. The virtual program can be used to help nurses prepare to assume pediatric caregivers roles in virtual involving infants and children.

CONCLUSION

In the study, it is observed that the virtual program in pediatric education is a way to effect. Pediatric education is important in the development of liking children as much as didactic lessons and clinical practice. So, the pediatric education needs the virtual techniques for the future. The virtual techniques used should also be investigated emotionally on the participant. In this data, strong emotion of bonding and low caregiver strain is shown by participants in pediatric education. It was also developed for participants liking of children in this way. As a conclusion, scarcity of the sample and inability to generalize were limited the study. However, it can be suggested to use different participants on pediatric education.

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