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Original Article

Transformative learning experience for physical therapy students through a community health promotion project for mothers of hearing-challenged children

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Abstract. [Purpose] The purpose of this project was to expose physical therapy students to transformative learning through a community health promotion project for mothers of hearing-challenged children. [Subjects and Methods] The participants were three mothers with their respective hearing-challenged child and twenty physical therapy students. The project consisted of seven sessions supervised throughout by a physical therapy instructor. The students participated in seven sessions, while the mothers were required to attend only two sessions of a health checkup and exercise program. [Results] Through the interaction between the mothers and students, the former felt physically and mentally refreshed, and the latter experienced transformative learning. The mother's physical status showed that all parameters for health variables were within normal range. However, it was found that mothers had little time for their personal mental or physical well-being because their focus was on planning and executing daily assignments for development of the child's verbal skills. [Conclusion] This project contributed to the students' learning experience and provided them with tools for possible future interest and involvement in community activity. The exercise session appeared to stimulate in the mothers an awareness and importance of their own personal and mental well-being.

Key words: Community health promotion, Physical therapy student, Mothers of hearing-challenged children

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INTRODUCTION

Recently in Japan, the scope of the physical therapist's role has expanded into the field of community health promotion. One application of this can be seen in the physical therapist's involvement in healthcare management for caregivers. This paper describes an experimental class designed to enable physical therapy students and mothers of hearing-challenged children to participate in a community health promotion project.

Development of hearing-challenged children's verbal skills requires more time and attention from the parents than that required of parents of normal-hearing children. For example, in following the *Kanazawa Method*[1)], which is one of the teaching methods of speech development for hearing-challenged children, parents of such children must daily prepare for and give instructions on tasks suitable for their child's current speech capability and future development. At the same time, the parents are also engaged in accompanying and transporting the child to/from hospitals/institutions for consultation/treatment. In Ishikawa Prefecture, Japan, in which this project took place, most parents from the Kaga and Noto regions have to drive from 60 to 120 km to reach hospitals/institutions for their consultation/treatment in their closest city of Kanazawa[1)]. Driving a car

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requires little physical activity, hence it has a low exercise intensity, and so the physical fitness of the driver may decrease due to the long-term effect. It is also known that driving a car may cause excess stress[2, 3]. When a parent is driving accompanied with a child he/she may feel more exhausted compared to when driving alone.

Physical therapy students during their training learn the adverse effects of decreased physical activity on the body and their active role in its intervention[4]. They are, therefore, well equipped on qualification to take part in health promotion within a community. This project was a means of introducing the physical therapy students to a role outside of a hospital setting.

SUBJECTS AND METHODS

The participants were three mothers with their respective hearing-challenged child and twenty physical therapy students. Two mothers were in their 30's and one in her 40's, all of whom were healthy. The ages of the children were four, five and six years old. The hearing level of one child was 80 dB requiring bilateral hearing aids, and the other two children had unilateral cochlear implants with hearing levels of 110 dB. The project was supervised throughout by the physical therapy instructor (MY) with informed consent being obtained from the mothers.

The project consisted of seven sessions as follows: a) a briefing on the contents of the program; b) a mock assessment; c) clinical assessment of the mother's physical status and attentional processing; d) analysis of the findings; e) exercise planning; f) exercise execution; and g) debriefing. Each of these sessions lasted ninety minutes with the mother's healthcare management being taken into consideration from many aspects for the exercise planning stage.

The procedures were as follows: on Day 1, the instructor conveyed to the students the purpose of the project, which was to give them the opportunity to experience transformative learning. This would be achieved by an active inquiry into the health of the mothers of hearing-challenged children through tests and an interview. Based on the findings, students were to propose an appropriate exercise program for the mothers' health management. The project's pre-determined schedule of seven sessions conceived by the authors was then conveyed to the students. Moreover, they were told that this would be a prospective study and the project would be a collaborative effort between the instructor and students. This was followed by dividing them into three groups; two groups of seven students and one of six. The students were instructed to determine among themselves the role of each group and each individual student. Thus, one group chose to be in charge of the assessment of the mothers' physical fitness, another group to test the mothers' attentional processing and carrying out an interview regarding their lifestyle, and a third group to guide the mothers to the assessment area and also act as caregivers for the children. Finally, the students were instructed to plan the assessment procedure for the rehearsal on Day 2.

On Day 2, following the rehearsal for the assessment, the individual student groups were instructed to determine their roles and procedures for Day 3.

On Day 3, in addition to the students' assessment of the mother's health status, the focus was also on how aware the mother herself was of her own mental and physical well-being. For testing of the mothers' physical status by the students the authors had referred to the fitness test recommended by the Ministry of Education, Culture, Sports, Science and Technology[5] as well as the exercise guidelines recommended by the Ministry of Health, Labour and Welfare 2006[6]. The items tested were muscle strength, endurance, agility, balance, exercise tolerance and flexibility. A trail making test was used for the mother's attentional processing[7]. A semi-structured interview was used to learn of the mother's lifestyle[8]. The questions the mothers were asked during the interview concerned the following subjects: daily routine, physical condition, past and current hobbies and mental well-being, especially concerning the degree of happiness and any concerns they may have of being mothers of hearing-challenged children. During the assessment process the child either stayed in close proximity to the mother or the students played with them. The students were instructed to use face-to-face visual contact with the child and speak to them in their normal tone of voice, but fairly slowly and in a relaxed manner. Later, each student from the interview group reported on her own opinion and impression of the assessment.

On Day 4, the instructor examined the findings from the mothers' fitness level, in addition to those of the students who had been instructed to check the mothers' physical fitness levels in relation to the mean values. Afterward, the instructor integrated her findings with those provided by the students.

On Day 5, taking the findings from the mothers' assessment into consideration, a specific exercise session was developed for these mothers, so they could experience pleasurable movement and relaxation of their body, which would be conducive to encouraging them to maintain their present physical fitness. This was accomplished as follows: each student within a group was asked to devise her own exercise program, which was followed by a group discussion together with the instructor, culminating in a one-time exercise program. As children typically like mimicking things, nicknames were introduced for each exercise, i.e. *seaweed*, *scissors* and *freight train*. The exercise program was planned in such a way that the mother and child could continue to exercise together at home.

On Day 6, the mothers and children participated in the exercise program consisting of three consecutive parts: for Exercise Program A, each student from the three groups had suggested one exercise, and one exercise was chosen from each group, culminating in a total of three types of exercises that aimed at improving flexibility, agility and endurance. Each student from the three groups who had proposed a chosen exercise first explained it to the mothers. These exercises were, then, carried out in a group exercise class.

The flexibility exercise, which took five minutes, was demonstrated by the student from the group that proposed it. The

mothers formed a circle in long sitting and carried out bilateral arm elevation with slow and gentle trunk flexion, extension and rotation. This was then repeated in standing.

To carry out the agility exercises, the mothers, children and 14 students stood around the room, and another group of six students who had proposed these exercises stood facing the 20 participants. Then, two of these six students demonstrated five different movements randomly and the 20 participants followed each movement consecutively. Specifically, these exercises consisted of a) jumping with feet together and landing on the spot; b) jumping with feet together and landing with the legs abducted; c) jumping and landing with one leg forward and the other backward; d) jumping and landing with the whole body facing left and then right; and e) from standing to squatting and returning to standing with a small jump. These movements were carried out continuously for five minutes with a gradual increase in speed.

The endurance exercise involved movement of the whole body with a volleyball. Specifically, three lines of five people were formed, each consisting of a mother, child and three students. The children, then, drew lots from a box held by a student. The lots indicated one of the following instructions: *Pass the ball over the head*, *Pass the ball sideways* or *Pass the ball between the abducted legs*. The ball was, thus, passed from the front to the rear. The person at the rear, upon receiving the ball, walked up to the front, and this sequence was repeated to the last person. The lots were re-cast, and the procedure was continued until ten minutes had passed.

For Exercise Program B, two exercises had been selected out of more than the 20 suggested by the students. These exercises were aimed at physical fitness accompanied with games and everybody participated. The students who had proposed these two exercises explained them to the participants. Specifically, the first exercise involved all mothers and students forming a circle. They were instructed to position themselves in stride standing with knees slightly bent and upper extremities in abduction with the elbows bent. Each child was, then, instructed to run toward one of the adults and climb into their arms. This was repeated for three minutes with the child changing the chosen adult. The second exercise was a game of marching around the room to music, and, as soon as the music stopped, everyone played *janken*, (the game of rock-paper-scissors). The losing person of the *janken* game positioned himself/herself behind the winning person in a line. This exercise was concluded when everybody stood in one line and lasted for approximately five minutes.

Exercise Program I was proposed and taught to the mothers by the instructor. It was composed of relaxation exercises for the back muscles and explained to the students prior to the class. Specifically, in supine lying the mothers were instructed *to press their back against the floor and hold it for ten seconds and then relax* and to repeat it five times. Continuing in supine lying, but with the knees flexed, the mothers carried out gentle side-to-side rocking of the body five times with the hands clasped and raised above the chest. Moreover, in puppy (prone-on-elbows) position the mothers carried out alternate left and right arm thrusting forward and upward three times, each accompanied with a few-second's hold.

The students explained to the mothers the contents of Exercise Programs A and B, together with demonstration and execution of the classes under the supervision of the instructor. These three exercise programs were carried out consecutively on the same day in the following order of Exercise Programs A, I and B. Following Exercise Program I, the results of their health checkup was conveyed to the mothers. The total exercise program lasted for approximately 60 minutes.

On Day 7, the students were instructed to write up their opinions about their interaction with the mothers and children and also their impressions on the exercise session and instructions given to the mothers. Finally, the instructor and students exchanged their opinions on the program.

The students partook in all of the sessions, while the mothers were required to attend only two of the sessions that included a health checkup on Day 3 and the exercise program on Day 6 with the latter being participated in by the children.

This project was approved by the Kanazawa University Medical Ethics Review Board (Approval No. 638-1), and it was one of the Center of Community Projects carried out at Kanazawa University in 2015.

RESULTS

The students' opinions and impressions of the assessment are tabulated in Table 1. Table 2 shows their opinions expressed from interaction with the mothers and children and their impressions on the exercise session and instructions given to the mothers.

The mothers exhibited appropriate physical fitness levels and attentional processing for their age, and their test results were within normal range (data not shown). However, they had a history of lumbago and believed that their physical fitness was in decline. The findings on their lifestyle revealed that the mothers were engaged in many activities; i.e., housework, care of and playing with their children and accompanying them to/from hospitals/institutions. In addition, the mother planned and executed a daily assignment for her child, which was appropriate for the development of his/her language skills, in addition to recording the child's progress. Therefore, the mothers had little time for their personal mental or physical well-being.

DISCUSSION

Information gathering from the mothers by the students was a basic learning tool for their future partaking in community health promotion activity. To be able to conduct reliable information gathering, the instructor first organized a preparatory mock session before the execution of the live assessment and exercise program. At the preparatory stage, the students

Table 1. Excerpts of students' opinions and impressions on the assessment procedure

On students' performance
Strong points
·We were able to manage the infrastructure, like setting up chairs and taking care of the mothers' and children's personal belongings.
·We found the best way of instructing exercises to the mothers was by demonstrating them.
·We found that doing a prior mock assessment was useful.
·Many of us used our wits, which was conducive to facilitating a complementary relationship with the mothers and their children.
Points to be improved
·We should've prepared for more 'small talk' between the procedures.
·Also, we have to become more skilled in putting questions, so that the mothers can understand them more easily.
·We also felt that we had insufficient knowledge, skills and information in order to be able to instruct the mothers on how to prepare teaching materials and what to teach their hearing-challenged children at home.
On mothers and children
·The children seemed to love their mothers and always stayed close to them.
·We found that once the children became used to us, they talked to us.
·We realized that each child was very different. One of the children didn't want to be separated from their mother, but the others didn't mind.
·The mothers and children communicated easily and naturally together.
·The mothers communicated with their children even during their own assessment, like saying "Let's do it together, ○○ ! ", or "Look at me. I will do my best!".
·We thought it might be easier psychologically for the mothers to undergo the physical fitness test if they could communicate with each while doing the test.
·The mothers talked cheerfully, though they looked tense during procedures and testing. But, they seemed to relax when we had 'small talk' that didn't involve the procedures.
·The mothers appeared to want to talk to each other.
·The mothers sometimes were concerned that their children were troubling us.
·We felt that the mothers' tension was less when their children exercised with them.

Table 2. Excerpts of post-project impressions and opinions of students

·It would've been better if we'd played with the children first so they could've become used to us before we did the exercise program with the mothers.
·The mothers seemed more concerned about whether their children were exercising correctly rather than paying attention to themselves. We also seemed to pay more attention to the children. However, when we played with the children the mothers concentrated on their exercises and were able to receive feedback from the instructor.
·For the *freight train* activity in Program B, the children liked it because it was accompanied with music and they could hear it. But, for those with a more serious hearing defect, it would've been difficult. And for those with a cochlear implant, it would've been even more difficult to hear our voice from behind when we were connected like a train.
·We think the mothers should be first instructed on the exercise program without the children there. This would be possible if we separated the children from the mothers after playing together with us and they were more relaxed.
·Because we explained to the mothers the effect of exercise on the muscles we think it helped them become more aware of moving their body.

discussed about the procedures that they would partake in and the role that each student would fulfill. They also carried out simulation sessions during which each student played the role of a mother or a child. In general, class instruction is limited to a lecture and demonstration, but this community project enabled the students to carry out an assessment with analysis and planning and execution of an exercise program for mothers of hearing-challenged children. Therefore, in accordance with Bloom's Taxonomy[9], one of the factors for students' learning may have, through this project, reached the highest element, which is creating. Following testing procedures for the mothers and planning for the exercise program including its execution the students were able to express a variety of opinions and impressions (Tables 1 and 2).

Time was allowed for the students to interact and play with the children, while the instructor conveyed the results of the health checkup to the mothers between Exercise Programs A and B. Therefore, this exercise program actually could be viewed from two aspects: a) the mothers' participation with their children; and b) the mothers' time for reflecting on themselves, which is demonstrated in the students' opinions (Table 2). The first step for any health behavioral change to take place is to achieve consciousness raising, followed by dramatic relief[10].

All of the mothers were somewhat concerned about their own health, but all parameters of their health variables showed that they were within normal range. However, before partaking in the project the mothers may have had few opportunities to consider their own mental and physical awareness because of their busy daily schedule. Through this project, the authors and students came to understand the importance of stimulating in each individual mother an interest in self-awareness. Therefore, continuation of such a project in the community could further facilitate and deepen the mothers' interest and motivation about their own health. In addition, the results of their health assessment and instruction on exercises could be given in more detail. Further, performing exercises in a group can be a pleasure, which acts as an incentive to the participants to move their bodies. Physical exercise can be a form of non-verbal communication, which, in turn, may offer an environment conducive to conveying participants' own private thoughts and concerns freely. On completion of the exercise session the mothers commented as follows: *It was enjoyable*, or *We've been able to do exercise for the first time after a long time and feel refreshed in our minds and body*. An exercise program, such as the one presented in this project, could be a valuable means of demonstrating health awareness to mothers of hearing-challenged children.

As a result of the interaction between the mothers and students, the latter had a transformative learning opportunity through this community health promotion activity for mothers with hearing-challenged children. Further, this project expanded the scope of the students' physical therapy knowledge and experience, which, in turn, would help build confidence in their ability to carry out such community health promotion activities in the future. Limitations of this study were as follows: a) statistics were not used for this project; and b) the number of the participants was too small to generalize the findings to physical therapy students and mothers of hearing-challenged children in Japan.

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