



# Pharmacist and child communication: A phenomenological multidisciplinary study from the perspectives of undergraduate students in pharmacy and child development



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## ARTICLE INFO

### Keywords:

Adherence to drug therapy  
Pharmacist  
Child development  
Pharmacist-child communication  
Interdisciplinary research

## ABSTRACT

**Background:** The present study is an interdisciplinary study about pharmacist-child communication exploring the perceptions and observations of students studying in two different but intersecting fields, which are pharmacy and child development.

**Objective:** The objective of the study is to illustrate the perceptions and observations of undergraduate pharmacy and child development students about pharmacist-child communication.

**Method:** The study is a phenomenological study and the phenomenon analyzed is “pharmacist-child communication”. Research study group was selected via criterion sampling method. The sample group consisted of 40 undergraduate pharmacy and child development students. “Demographic Information Form” was used as the data collection tool and “Focus Group Interview Guide” was prepared for focus group interview meetings. Ten open-ended questions aligned with the research objective were asked to the students in the focus group interview. The collected data were analyzed by descriptive analysis method and the experiences of these two different groups of students were explored.

**Results:** At the end of the study, two main themes and five sub-themes were obtained. These themes and the sub-themes are as follows: adherence to drug therapy (Sub-themes: communication strategies relevant to the cognitive development at various ages of the child, rewarding children and reinforcement of good behavior, role of the parent in pharmacist-child communication) and physical characteristics of the pharmacy/pharmacist (Sub-themes: physical characteristics of the pharmacy, physical characteristics of the pharmacist).

**Conclusions:** Each theme was illustrated in the study with comments of the students. The results showed that the observation and perceptions of the students studying in two different fields agreed with each other and those of other researchers. It is proposed that projects and practices can be developed by these two different disciplines, pharmacy and child development are two intersecting fields. As they complement each other, they could strengthen the pharmacist-child communication and as a result support the child's adherence to therapy.

## 1. Introduction

Pharmacists are health professionals who are experts in medicine and have an important role in primary health care services. They receive more intensive and specific training on medicine than all other health professionals.<sup>1</sup> On the other hand, child development specialists have many duties and responsibilities for supporting the development of children such as developmental screening, assessment and creating and implementing developmental programs.<sup>2</sup> They know children well and are experts in the field.

According to the “Convention on the Rights of the Child” children have many basic rights such as living, education and care. Health is another basic right of children, and they are also individuals in this respect with constitutional rights just like adults.<sup>3</sup> Raising healthy children can be achieved by increasing both the awareness of children and their families about healthcare issues. Adherence to drug therapy is very important in terms of improving health outcomes of children. Problems of adherence to drug therapy, on the other hand, prolongs the healing process of the disease and as a result imposes an economic burden on both the family and the health system.<sup>4</sup> Drotar expressed the problem of adherence to drug therapy

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in children as maladaptive behaviors displayed while taking medication or not following a diet in response to the advice and recommendations of healthcare professionals.<sup>5</sup> Adherence to drug therapy is an important issue in children and adults with chronic diseases. Studies showed that patients did not adhere to treatment at rates ranging from 11% to 93%, with an average of 50%.<sup>4</sup> Al-Hassany et al. emphasized that medication adherence problems were more common in children than adults.<sup>6</sup> In general, the factors that prevent adherence to drug therapy were categorized by Chappell in three main groups. The first factor was linked to social and material resources which included financial problems and lack of social support. Second one was having poor communication and limited problem-solving abilities and the last one was personal characteristics such as the patient's psychological stress or resistance to cooperation.<sup>7</sup> It is possible to increase children's adherence to drug therapy by using communication skills effectively which can prevent the problems regarding relations between health professionals and patients.<sup>8,9</sup> Researchers in health communication showed that professional communication has relevance on patients' adherence to drug therapy.<sup>10</sup>

Menacker et al. stated that medication education is necessary for increasing adherence to drug therapy and the role of the pharmacist is essential for supporting the children with chronic diseases.<sup>11</sup> However, children can still experience significant misinformation and confusion about medicine after getting counselling.<sup>12</sup> In order to solve this problem, a ten-item medicine education guideline for children and adolescents was prepared in 1998 which is based on multidisciplinary studies run by pediatricians in the United States.<sup>13</sup> Furthermore, the importance of building relationships and using communication skills which is needed during drug counselling with children was also pointed out in the International Pharmaceutical Federation (FIP) document published in 2012.<sup>14</sup> Development of pharmacists' communication skills with children is very important. Pharmacists are expected to have information about the cognitive development of children and inform them about medicines relevant to their cognitive levels. Piaget stated that when adults listen to children then in reverse the children begin to speak in accordance with the perspectives of the adults. In other words the speech of children becomes socially appropriate and transforms into a dialogue as they grow up.<sup>15</sup> According to Vygotsky, children use speech not only for social communication, but also for planning, solving problems, and controlling their own behaviors.<sup>16</sup> Taking these developmental characteristics of children into consideration, effective communication is important for their adaptation to society. For communicating effectively children need to develop their competences too such as understanding the verbal and nonverbal messages of individuals around them, initiating and maintaining relationships and being able to problem-solve.<sup>17</sup> They need these in order to have control over their social and emotional lives and develop effective relationships with others.<sup>18</sup> When communicating with children, using words and expressions that they can understand, speaking from a distance which enables eye contact, as well as using body language effectively can result with effective communication.<sup>19</sup> Effective communication between the pharmacist and the child leads to the improvement of the child's health behavior when the pharmacist spends longer time for pharmacist-child interaction and motivates the child and family to seek information about the child's care.<sup>14</sup> Sleath et al. suggested that pharmacists should use patient-oriented communication while communicating with children and their parents, ask them open-ended questions in line with their cognitive levels, and provide relevant counselling. Health communication between the pharmacist and children suffering from chronic diseases as well as their parents, is vital for supporting adherence to therapy and therapy outcomes.<sup>20</sup> Among the communication barriers between the pharmacist and children, pharmacist's white coat appearance is also mentioned. Literature survey about children showing fear to pharmacists' white coat appearance was found to be limited however only Abraham et al. in their study stated that children hesitated to talk to the pharmacists wearing white coats.<sup>21</sup>

The present study was conducted for exploring the observations and perceptions of undergraduate pharmacy and child development students about pharmacist-child communication. This phenomenological study is unique as it is an interdisciplinary study about pharmacist-child

communication and seeks the perspectives of those studying in two different but intersecting fields. Focus group interviews with undergraduate students from these two disciplines were run for exploring how the pharmacist communicates with the child which is needed for adherence to therapy as well as detection of what their thoughts are about communication barriers regarding the pharmacist and the pharmacy. In this study, undergraduate students from child development discipline were especially selected to accompany undergraduate pharmacy students because child development students do not only know the developmental characteristics of the child well but also have many training and internship opportunities related to children during their education. The study research questions were as follows: What are the observations of undergraduate child development students about pharmacist-child communication? What are the opinions of undergraduate child development students about pharmacist-child communication? What are the observations of undergraduate pharmacy students about pharmacist-child communication? What are the opinions of undergraduate pharmacy students about pharmacist-child communication? Is there a difference in perceptions of students from two fields about pharmacist-child communication?

## 2. Method

### 2.1. Research model

In this study, phenomenological method which is one of the qualitative research methods, was used. Phenomenological method focuses on the common results of experiences with a phenomenon while dealing with describing events, objects, situations as a whole and in many ways, and revealing their meanings.<sup>22</sup> The phenomenon analyzed was "pharmacist-child communication".

### 2.2. Study group

The research study group consisted of undergraduate pharmacy and child development students from different grade levels. In this study, eight focus group interviews were implemented which included undergraduate students: four of them from pharmacy and four of them from child development disciplines. Each focus group consisted of five students. Focus group interviews from both disciplines were held with first, second, third and fourth year students. The reason for including students from four different grades in the study was due to the fact that students' knowledge, practice and internship experiences were expected to be naturally different. Still the content of the data did not allow us to examine the differences between the students who were studying in different grades. A total of eight focus group meetings were held in groups of five from different grade levels of each discipline. In general each focus group meeting took around 60 min. Purposeful sampling methods are recommended in studies conducted in a phenomenological design, and it is stated that the sample size can consist of at least five participants the number which can be increased relevant to the purpose of the research.<sup>23</sup> Criterion sampling, a purposeful sampling method was used in the study. In this method, the sample is selected in accordance with the conditions or criteria in convenient sampling.<sup>24</sup> In the study, the criterion was determined as being undergraduate pharmacy and child development students.

### 2.3. Data collection tools

In the phenomenological research design, data collection tools such as interview, observation, visual tools and written materials are used.<sup>25</sup> In this research, "Demographic Information Form" was used as data collection tool and "Focus Group Interview Guide" was prepared for focus group meetings. Focus Group Interview Guide created by the researchers was sent to an academician working in the field of psychology for expert opinion and the data collection process was then started. Ten open-ended questions aligned with the research objective were asked to the students in the focus group interviews. Some of the questions were: "What should a

**Table 1**  
Distribution of students according to their demographic characteristics.

Demographic Characteristics of Students	n	f
Department		
Child Development	20	50
Pharmacy	20	50
Gender		
Female	35	87.5
Male	5	12.5
Age		
18–20	13	32.5
21–25	23	57.5
26–30	2	5.0
31–40	2	5.0
Grade		
1	10	25
2	10	25
3	10	25
4	10	25
<b>TOTAL</b>	<b>52</b>	<b>100</b>

pharmacist be aware of when communicating with children?”, “What should be the role of the parents regarding the communication between the pharmacist and the child?”, “How should a pharmacist communicate with the children for rewarding them for medicine use?”, “What would you recommend the pharmacist for improvement of their communication with children?”. The demographic information of the students participating in the study is presented in Table 1 (See Tables 2–5).

40 undergraduate pharmacy and child development students from Istinye University participated in the study. While 50% (20) of the students participating in the study were from the child development department, the other 50% (20) were studying at the faculty of pharmacy. Regarding gender, 87.5% (35) of them were female and only 12.5% (5) were male. When the ages of the students were examined, it was seen that the majority of them were between the ages of 21–25 (57.5%).

#### 2.4. Data collection and analysis

The data collection process of the research consisted of focus group interviews. Such focus group interviews have an important function in collection of qualitative data. They are group interviews using the discussion technique, focused on a subject whose boundaries are determined within the qualitative research designs and methods.<sup>25</sup> A focus group interview

is a series of discussions designed for learning the thoughts of a particular group of participants on a predetermined topic.<sup>26</sup> Eight focus group interviews, four of them with pharmacy and the other four with child development undergraduate students were held. Each focus group interview had five participants. We have chosen this number of focus groups as it is recommended in the literature. It has been indicated that when averaging the sequential and randomized order of focus groups, two to three focus groups are sufficient to capture 80% of themes, including the most prevalent themes, while three to six groups are sufficient for 90% of themes in a homogenous study population using a semi-structured discussion guide.<sup>27</sup>

Focus group interviews were carried out during the Covid 19 pandemic period when the universities were closed. They were held on the Zoom platform and were recorded for preventing data loss. Focus group interview method was preferred in this study instead of individual interviews for understanding the perceptions and opinions of students as the students would have the opportunity for brainstorming and synergistic discussions. The students listened to each other and they expressed either the opinions they wanted to add or oppose during the focus group interviews. For example some of the students said that “my friend’s opinion leads me to another opinion such as...”. Some other students stated that “I want to add this opinion to what my friends said”. During the interviews the next question was asked when the students did not have a different opinion and said “I also share the same opinions, I also think the same, or there is no opinion that I want to add”. The decision for data saturation was reached when the same answers started to be repeated. Participants were informed in advance that the interviews would be recorded. “Informed Consent” and “Demographic Information” of the participants were obtained by using Google Form. Ethical Committee approval of the study dated 26.04.2021 was given by Istinye University Ethical Committee For Research on Humans. In the focus group interviews, participants were encouraged to express their thoughts on the research questions within the scope of the focus group interview method, and attention was paid to the opinions of each student on each question. In this process, moderators doing the interviews encouraged all students for equal contribution to the process. It was especially emphasized at the beginning of the sessions that the participants expressed their individual opinions to the questions which are in line with the the purpose of scientific research. At the end of the focus group meetings, audio recording of each group was transcribed both by using Voicedocs and by listening to audio recordings. The process was run by all researchers. The information obtained was written into a word document and compared in detail. All the expressions of the students who participated in the focus

**Table 2**

Theme 1 The theme of adherence to drug therapy; Sub-theme: “communication strategies relevant to the cognitive development at various ages of the child”.

Communication strategies relevant to the cognitive development at various ages of the child	Sample quotations
Opinions on 5–7 year-old children	<p>“A small human model can be used. For example, for a child with stomach pain: ‘Look here, here is the stomach and the stomach ache will go away if you use this medicine’ can be said when s/he takes this medicine.” (CD, H.S.U.).</p> <p>“You cannot speak to a 5–7 year-old child the way you speak to a 20 year-old. Kids usually don’t like it. They want you to be like them. I wanted it in this way when I was a child” (P, K.B.I.). “We should explain medication to preschool children using a simple language, via storytelling and play, by showing that the responsibility lies with the mother and they should take the medicine with her help.” (P, M.Ö.).</p>
Opinions on 7–11 year-old children	<p>“Schedules can be prepared for children aged 7–11 to show them how to take the medicine. A cartoon chart can be given to them and they can be asked to draw a star or moon on the chart when they take the medicine in the evening or a sun in the morning. In this way, the children can follow themselves and the use of medicine will be under their control.” (CD, E.T.). A school-age child can be asked about their concerns regarding the medicine. Information can be given regarding what they are curious about” (CD, B.Y.).</p> <p>“A direct communication can be established with a 7–11 year old child, for example, the medicine can be given directly to the child instead of their parent. The use of it can be explained to the child and the parent can still be responsible” (P, M.Ö.). “As a 7–11 year old child has a high level of perception and it can be stated that they should not take the medicine alone, however, they should take the responsibility of the drug, that is, when they will take it.” (P, A.S.).</p>
General comments without specifying age	<p>“Comprehensible small jokes can be made when talking to preschool children or a school-age child can be talked to as if they were an adult. The medicine can be introduced in a way that the child can understand. The responsibility of taking it can be given to the child” (CD, M.V.). “The age group of the child should be taken into consideration. It is important that the pharmacist pays attention to his mood, tone of voice and approach. Being humorous and smiling can strengthen communication. The medicine “will be good for a sore throat, etc.” can be said to explain clearly and understandably (CD, V.T.).</p> <p>“Each age group has different characteristics. It is necessary to master the words that each age group uses, to know them well, and make explanations to them in a way that they can understand” (P, K.B.I.). “I think it is necessary to pay attention to the terminology. The terms should be used in compliance with the age group.” (P, M.B).</p>

**Table 3**

Theme 1 Adherence to Drug Therapy. Sub-theme: rewarding of children sub-theme.

Rewarding of Children Sub-theme	Sample Quotations
Statements about the use of objects as material reinforcers	<p>“Rewarding methods should be used. For example, sticks can be given and used as bookmarks.” (CD, E.C.), “It would definitely be good to use a reward. The pharmacist can ask the child to bring the empty medicine box and throw it in the recycling bin when he is done with it, in return, he will get books, pens, balloons, etc.”. In this way, the child voluntarily takes his medicine and receives a reward.” (CD, B.K.).</p> <p>“Actually, it may be for encouragement rather than reward. For example, they were giving candy at the pharmacy where I worked during my internship; I find it wrong. Colorful pencils, notebooks or sticky notes can be given instead (P, G.O.). “It doesn't make much sense to me to give them things like candy, chocolate, as they are foods that the kids are already after and we are trying to keep them away as much as possible. But stickers can encourage them to take the medicine, for example, they can stick it on a chart after drinking their syrup.” (P, A.S.).</p>
Statements regarding the use of charts/images as material reinforcers	<p>“It would be very nice if the children who have used medication and have recovered could bring their pictures and paste it on a wall drawn like a tree figure in a pharmacy. In this way, they can both see their own pictures and the pictures of other children who have recovered. This can motivate them” (CD, M.V.). “I think that a healthy communication with the child requires no rewards. But maybe a calendar on which he can put a star for each pill he takes can be fun” (CD, B.Y.).</p> <p>“Children with chronic illness may be given something like a chart for keeping them motivated” (P, S.O.).</p>
Statements about the use of food as a material reinforcer	<p>“Candy/chocolate should not be given as a reward. Instead, crayons, coloring books, balloons should be preferred” (CD, T.K.),</p> <p>“Children were given chocolates, stickers and sweets at the pharmacy where I did my internship, but I think it that this should be used for raising their morale and making them feel valued, rather than as a reward” (P, B.U.).</p>
Statements emphasizing the importance of verbal reinforcers by opposing the use of material reinforcers	<p>“If the child is pre-school, a cake-chocolate sticker-style reward can be used, but I think it is not good for school children because it might turn out to become a habit” (CD, B.K.), Phrases such as “If you take your medicine, your body will get stronger, it will help you to recover, etc.” can be useful (CD, K.B.), “To build a better and joyful communication, superhero costumes can be used” (CD, E.K).</p> <p>“I don't think children should be rewarded unless it is verbally done. For example, by saying things like ‘Look, you took the medicine and now your nose is not running any more. Did you notice it too?’ This is actually a reward for the child. Getting well!” (P, M.B.). “Your material rewards would not be very useful. It might lose its effect by time and the child may start not doing anything without reward” (P, M.Ö.).</p>

**Table 4**

Theme 1, Role of the parent in pharmacist -child communication sub-theme.

Role of the parent in pharmacist-child communication sub-theme	Sample Quotations
Parental Role	<p>“For the preschool child, the parent needs to introduce the pharmacist to him in advance. In other words, the child even if not sick yet, can be taken to a pharmacy in his neighborhood and be informed, “Look, this is a pharmacy where medicines are provided. Those who work here are called pharmacists. Questions can be asked such as what does a pharmacist do?. When the child is sick, he then knows where to go after the doctor has prescribed her/his medicine. For a school-age child, if he has relatives who are pharmacists, they can be introduced. This can also promote this profession” (CD, K.B.)</p> <p>“Parents should involve the child in the process. For example, they can say ‘Look, this is your prescription number. Now we will go and get your medicine together.’ In this way, the child can develop a sense of responsibility. His motivation may increase when he meets the pharmacist. It may make the child happier if the pharmacist hands over the medicine to the child while the parent is present” (CD, B.S.S.).</p> <p>“Parents need to be educated about using medication too. It should be one of the roles of pharmacists to take feedback from the parents while informing the children about the use of medicine and try to understand whether the parents have understood it or not.” (P, C.S.). “A healthy person from the family who has used multi-vitamins can be a role model for the child, for increasing adherence of the child to the drug.” (P, C.T.).</p>

**Table 5**

Theme 2 Physical characteristics of the pharmacy/pharmacist sub-theme.

Pharmacy Physical Characteristics Theme	Sample Quotations
Physical Characteristics of the Pharmacy	<p>“A children's corner can be prepared in the pharmacy, where communication can be run with the child. The place can be arranged in a way that will attract the attention of children. Pharmacists may place a booster stool for the child behind the counter. He can communicate effectively at the same level by ensuring that the child gets on the stool when s/he talks to the child” (CD, K.B.), “The environment can be arranged in a way that can attract the attention of the child. Small toys can be put on the table. Ornaments can be hung on the ceiling. There can be a box with colored pencils. A conversation can be started with the child by saying, “Which pen do you want me to write your name with?” (CD, E.T.).</p> <p>“It may be important to create a private area for children inside the pharmacy. In order to get their attention more, the pharmacy and pharmacists need to show them that it's a much nicer place, not just surrounded with injections and other hurting things (P, A.S.). “Sometimes there may be sweets on the counters at the pharmacy. There may be special playgrounds for children, the use of medicine and vitamins can be explained in these playgrounds, the treatment of the child can be integrated into these games” (P, G.C.), “Wallpapers with cartoon characters can be made on a wall of the pharmacy, as in the children's floor in hospitals.” (P, B.A.U.).</p>
Physical Characteristics Pharmacist	<p>“Since children are afraid of white coats, pharmacists can wear colored ones, and even children can wear them” (CD, D.Y.), “The clothes that pharmacists wear, may have cartoon characters or flowers on them for children” (CD, K.B.),</p> <p>“Pharmacy staff can be a factor of worry for the child because they look like doctors with the white coat. Children are more relaxed when the pharmacists wear more colorful clothes,” (CD, D.G.),</p> <p>“Perhaps little superheroes or cartoon badges can be attached to the collar of the pharmacist's apron to overcome the children's fear of white coats” (P, B.A.U.),</p> <p>“Pharmacists definitely need to remove the white coat. Children are afraid of the white coat. (P, E.B.).</p>



groups were transcribed. Incomprehensible expressions were re-listened and edited. The contributions of the students were taken as direct quotes. Initials denoted to pharmacy and child development students were: P. for pharmacy and CD for child development. The coding was created by adding numbers to the relevant initials (e.g. CD-1, P-1) for each student.

Descriptive analysis method was used, which is one of the data analysis methods of qualitative research methods. In this method, the data can be arranged according to the themes revealed by the research questions, or it can be transferred in line with the questions or dimensions used in the interview and observation processes. Here, answers are sought mainly to the questions of 'What?' and 'How?' The data are analyzed from a thematic point of view and the findings are presented to the reader by organizing and interpreting them. The data obtained in this arena are first described in a systematic and clear way. The data are explained and interpreted in a systematic manner, supported by direct quotes, by preserving their original form, and possible cause-effect relationships are examined and reported.<sup>22,25,28</sup> In this study, the data collected through interviews were examined within the framework of the themes determined by the researchers in the context of the research questions. In this way, the following process was followed in the descriptive analysis of the research: A thematic framework was created in the context of the transcripts of the interview records and the research questions. The data were analyzed within this thematic framework. Notes were taken in the context of the themes. The data were transferred to the relevant data analysis forms, and a thematic analysis was made in the context of the research questions. In other words, the data were divided into themes determined for descriptive analysis. The compatibility of these data and themes were examined and finalized by the researchers at first. Then the academicians from the fields of pharmacy as well as psychology who conducts qualitative studies, and child development, who is the master thesis advisor of one of the researchers were consulted. These academicians independently examined all the data. The opinions of the experts were re-examined by the researchers.

### 3. Results

As the result of this research, based on qualitative data two main themes were obtained which are adherence to drug therapy and physical characteristics of pharmacy/pharmacist together with five sub-themes. Themes and sub-themes obtained from the study are shown in Fig. 1.

#### 3.1. Theme 1. Adherence to drug therapy

One of the main themes that emerged as a result of the focus group discussions with the undergraduate pharmacy and child development students was the theme of "adherence to drug therapy". The following three sub-themes regarding this theme were identified as "communication strategies relevant to the cognitive development at various ages of the children", "rewarding children and reinforcement of good behaviour", "role of the parents in pharmacist-child communication".

##### 3.1.1. Sub-theme 1. Communication strategies relevant to the cognitive development at various ages of the child

The first sub-theme of adherence to therapy was the communication strategies relevant to the cognitive development at various ages of the children. The opinions of the students regarding this sub-theme were discussed in two groups: the opinions of the children aged 5 to 7 and aged 7 to 11. The quotes from the students for the age group 5 to 7 were as follows: "A small human model can be used. For example, for a child with stomach pain: Look here, here is the stomach and the stomach ache will go away if you use this medicine can be said" (CD-1), "We should explain medication to preschool children in simple language, by using storytelling and playing games, by showing them that the responsibility lies with the mother and they should take the medicine with their mother's help" (P-7). Regarding 7 to 11 year-old children the following statements were made by the students: "Schedules can be prepared for children aged 7 to 11 in order to show them how to take the medicine. A cartoon chart can be given to them and they can be asked to draw a star or moon on

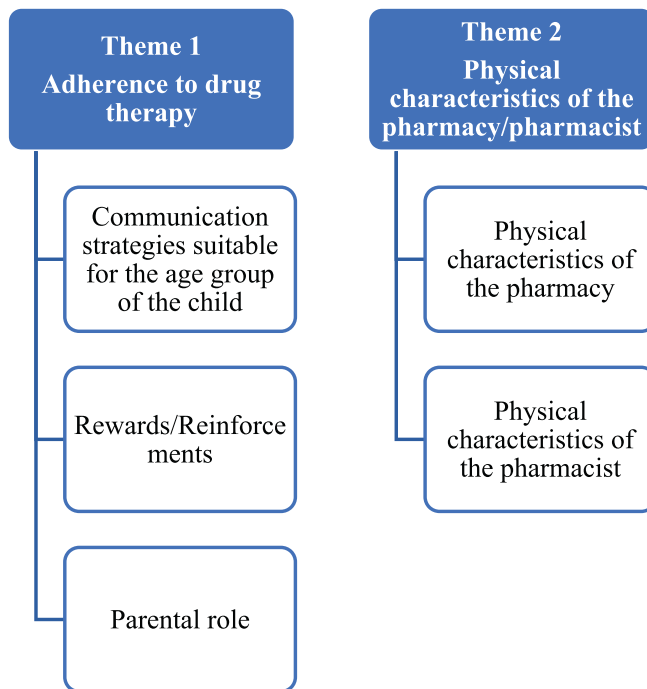


Fig. 1. Themes and sub-themes obtained from the study.

the chart when they take the medicine in the evening or a sun when they take the medicine in the morning. In this way, the children can follow themselves and the use of medicine will be under their control" (CD-10), "A school-age child can be asked about their concerns regarding the medicine. Information can be given regarding what they are curious about" (CD-5), "A direct communication can be established with a 7 to 11 year old child. For example, the medicine can be handed over directly to the child instead of the parent. The use of it can be explained to the child and the parent can still be responsible" (P-7).

##### 3.1.2. Sub-theme 2. Rewarding children /reinforcement of good behavior sub-theme

The second sub-theme of adherence to therapy emerged as rewarding children /reinforcement of good behavior. The opinions of the students regarding this sub-theme were classified into groups such as use of objects, use of charts, use of food as rewards. As an opinion against verbal rewards were also emphasized by a few students. The following statements were made by the students regarding use of objects, charts/images as rewards: "I think that a healthy communication with the child requires no rewards. But maybe a calendar on which he can put a star for each pill he takes can be fun" (CD-5), "Children with chronic illness may be given something like a chart for keeping them motivated" (P-1), "It would be very nice if the children who have used medication and have recovered could bring their pictures and paste it on a wall drawn like a tree figure in a pharmacy. In this way, they can both see their own pictures and the pictures of other children who have recovered. This can motivate them" (CD-4), "It would definitely be good to use a reward. The pharmacist can ask the child to bring the empty medicine box and throw it in the recycling bin when he is done with it, in return, he will get books, pens, balloons, etc. In this way, the child voluntarily takes his medicine and receives a reward" (CD-3), "To build a better and joyful communication, superhero costumes can be used" (CD-8), "Rewarding methods should be used. For example, bookmarks can be given" (CD-2).

Quotes regarding the use of food as rewards were as follows: "Candy/chocolate should not be given as a reward. Instead, crayons, coloring books, balloons should be preferred" (CD-6) "Children were given chocolates, stickers and sweets at the pharmacy where I did my internship, but I think that this should be used for improving their morale and making them feel valued, rather than as a reward" (P-5), "Actually, it may be for encouragement rather than reward. For example, they were giving candy at the pharmacy where I worked during my

internship; I find it wrong. Colorful pencils, notebooks or sticky notes can be given instead" (P-2). "It doesn't make much sense to me to give children things like candy, chocolate, as these are foods that the kids are already after and from which we are trying to keep them away as much as possible. But stickers can encourage them to take the medicine, for example, they can stick it on a chart after drinking their syrup" (P-3), "If the child is pre-school, a cake-chocolate sticker-style reward can be used, but I think it is not good for school children because it might turn out to become a habit" (CD-3). Following are the statements made about using verbal rewarding: "If you take your medicine, your body will get stronger, it will help you to recover, etc." can be useful (CD-7), "I don't think children should be rewarded unless it is verbally done. For example, by saying things like Look, you took the medicine and now your nose is not running any more. Did you notice it too? This is actually a reward for the child. Getting well!" (P-6), "Your material rewards would not be very useful. It might lose its effect by time and the child may start not doing anything without reward" (P-7).

### 3.1.3. Sub-theme 3. Role of the parents in pharmacist- child communication sub-theme

The third sub-theme of adherence to therapy was identified as role of the parents in pharmacist- child communication. The following quotes were made about this subject. "For the preschool child, the parents need to introduce the pharmacist to the child in advance. In other words, the child even if not sick yet, can be taken to a pharmacy in his neighborhood and be informed as follows: Look, this is a pharmacy where medicines are provided. Those who work here are called pharmacists. Questions can be asked such as what does a pharmacist do? When the child is sick? Then the child knows where to go after the doctor has prescribed the medicine. For a school-age child, if he has relatives who are pharmacists, they can be introduced. This can also promote this profession" (CD-7), "Parents should involve the child in the process. For example, they can say: Look, this is your prescription number. Now we will go and get your medicine together. In this way, the child can develop a sense of responsibility. His motivation may increase when he meets the pharmacist. It may make the child happier if the pharmacist hands over the medicine to the child while the parent is present" (CD-9), "Parents need to be educated about using medication too. It should be one of the roles of pharmacists to take feedback from the parents while informing the children about the use of medicine and try to understand whether the parents have understood it or not" (P-8). "A healthy person from the family who has used multi-vitamins can be a role model for the child, for increasing adherence of the child to drug therapy" (P-9).

## 3.2. Theme 2. Physical characteristics of the pharmacy and pharmacist

The views on the second main theme were gathered under two sub-themes which were pharmacy physical characteristics and pharmacist physical characteristics.

### 3.2.1. Sub-theme 1. Sub-theme of physical characteristics of pharmacy

The following statements were made concerning physical characteristics of pharmacy: "A children's corner can be prepared in the pharmacy, where communication can be run with the child. The place can be arranged in a way that will attract the attention of children. Pharmacists may place a booster stool for the child behind the counter. He can communicate effectively at the same level by ensuring that the child gets on the stool when s/he talks to the child" (CD-7), "The environment can be arranged in a way that can attract the attention of the child. Small toys can be put on the table. Ornaments can be hung on the ceiling. There can be a box with colored pencils. A conversation can be started with the child by saying, "Which pen do you want me to write your name with?" (CD-10), "It may be important to create a private area for children inside the pharmacy. In order to get their attention more, the pharmacy and pharmacists need to show them that it's a much nicer place, not just surrounded with injections and other hurting things (P-3). "Sometimes there may be sweets on the counters at the pharmacy. There may be special playgrounds for children, the use of medicine and vitamins can be explained in these playgrounds, the treatment of the child can be integrated into these games" (P-10), "Wallpapers with cartoon characters can be made on a wall of the pharmacy, as in the children's floor in hospitals" (P-11).

In terms of the physical characteristics of the pharmacist, the quotes were as follows: "Since children are afraid of white coats, pharmacists can wear colored ones, and even children can wear them" (CD-11), "The clothes that pharmacists wear, may have cartoon characters or flowers on them for children" (CD-7), "Pharmacy staff can be a factor of worry for the child because they look like doctors with the white coat. Children are more relaxed when the pharmacists wear more colorful clothes" (CD-12), "Perhaps little superheroes or cartoon badges can be attached to the collar of the pharmacist's apron to overcome the children's fear of white coats" (P-11), "Pharmacists definitely need to remove the white coat. Children are afraid of the white coat" (P-12).

## 4. Discussion

The present study was carried out in order to explore the perceptions of undergraduate students studying in pharmacy and child development disciplines about pharmacist-child communication. Champbell stated that "Medication Adherence in Children Remains a Challenge" in his publication and identified the improvement of health communication as one of the major factors of medication adherence.<sup>7</sup> Child – pharmacist communication is considered as a facilitator for adherence to therapy and the sub-themes discovered.<sup>51</sup> During the focus group interviews it was noted that the students from both disciplines had similar perceptions, opinions and suggestions in general about the pharmacist-child communication and complemented each other while in a few cases they had opposite views which they discussed very openly. Two main themes identified from the focus group discussions were adherence to therapy and physical characteristics of the pharmacy and pharmacist.

The first sub-theme of adherence to therapy was communication strategies relevant to the cognitive development at various ages of the child. Pharmacy and child development undergraduate students both had similar perceptions that the pharmacist should adopt different approaches relevant to the age group of the children during communication. Students emphasized the use of simple language during communication and recommended modeling, giving concrete examples, games or story telling when presenting the medicine to 5 to 7 year-old children. Explanations should be made in a way that a child understands. Concrete example for modeling could be the mother showing the doll while playing. Doctor games or creating a pharmacy environment at home, where the mother assumes the role of the pharmacist and the child is the patient could be an example for games. For story telling storybooks or puppets regarding taking medicine or drug counselling could be chosen followed by reading and dramatizing the story. For the age group 7 to 11, the opinions of both disciplines complemented each other. Child development undergraduate students mentioned using charts for follow-up of medication use and need for the pharmacist asking questions to the child. Pharmacy undergraduate students recommended direct communication with the child, empowering the child while keeping the responsibility for medication use both by the parent and the child. When Piaget's developmental stages are taken into account, children between the ages of 5 and 7 are in the pre-operational stage. During this period, children think symbolically. They have difficulty in perceiving long explanations. Simple and concrete narration or activities such as games, books, stories are easier to understand because they embody abstract information. At the age of 7 to 11, children pass to the concrete operational stage. During this period, children's reasoning skills increase and they can reason logically as long as it is applicable to concrete examples. During this period, children can focus on different features of an event or situation at the same time, and awareness (mindfulness) which includes critical thinking and paying attention to daily events and flexible thinking skills increase. The increase in these skills indicates that children can understand speech without being told in the form of concrete examples, games or stories.<sup>15</sup> The findings from focus group interviews confirmed that both group of students have learned and were aware of the developmental characteristics of children according to their age group. They have expressed opinions supporting Piaget's view.

The second sub-theme of adherence to drug therapy was rewarding children and reinforcement of good behavior. In this sub-theme, it was

determined that the students of both departments primarily focused on material reinforcements. As for the rewards or reinforcers, it was seen that the students of both departments were aware that material reinforcers had the fastest effect. Gakiria also stated that material rewards are powerful motivating reinforcers and may be needed in the first applications in teaching a new skill to children.<sup>29</sup> Although such concrete and material reinforcements lose their effect very quickly, they make it very easy to attract the attention of the child and to initiate communication. Furthermore material rewards attract children's attention and make it easier for them to approach the person in front of them positively.<sup>30</sup> There were three types of material reinforcers that students emphasized the most. These were reinforcers given in the form of a) an object, b) a chart/image, c) the use of food. In addition, a group of students opposed the use of material reinforcers and stated that reinforcement should be given in the form of statements emphasizing the importance of verbal reinforcers. The students emphasized that in the first stage, object rewards such as bookmarks, stickers, and food rewards/reinforcers such as candy and chocolate were important in attracting the attention of the child and initiating communication. Additionally, they emphasized that the use of charts would be effective for children who need to use regular medication for chronic diseases or cancer. However, there were also students who were aware of the concern that food rewards specifically would not comply with the health or nutrition of the child, and argued that they should be used for improvement of the morale of the children and make them feel valued. Although the students of both departments emphasized the use of material reward more in the focus group interviews, the students who emphasized the verbal reward by opposing the material rewards/reinforcers were also noteworthy and it was reported that the contributions of the pharmacist in both the clinical and hospital environment strengthened the positive health outcomes for the patients. Gündüz et al. determined that giving concrete rewards such as candy, balloons, chocolate and stickers in the hospital was an important factor in overcoming the fear of the hospital as well as being a motivating factor.<sup>31</sup> Majority of the student opinions comply with this study's findings.

The third sub-theme of adherence to drug therapy was the "role of the parent in pharmacist-child communication sub-theme". Regarding this sub-theme, the students of both departments emphasized the role of the parent in ensuring the child's adherence to therapy. The students emphasized the importance of the fact that parents can create a bridge between pharmacist and child and encourage them to communicate. The fact that pharmacy students think in this way is because of the competencies they have already gained during their education by receiving training on communication skills. Ann et al. have confirmed that communication training was effective in improving oral and written communication skills of pharmacy students.<sup>33</sup> The pharmacy curriculum includes topics such as the importance of educating children and their parents about drugs, communicating in accordance with the cognitive development level of the child, the methods of communicating with children of different ages about their drugs, the ways of informing children about drugs at different ages, and ensuring children's compliance with drugs.<sup>32</sup> Parents have an important role in supporting the children to overcome their fear from healthcare in general. We can say that the findings of this study about the importance of the role of the parent in health communication about which students are aware of and which they have stated is mentioned in many publications.<sup>51</sup> Gündüz et al. found that children who were informed about the hospital positively in advance by their parents and who used play materials such as doctor supplies at home were able to overcome their fear.<sup>31</sup> There are findings from different authors saying that talking about the hospital before admission to the hospital reduced the fear of the hospital in children.<sup>34-36</sup> In addition to these, De Maria et al. stated that children are also negatively affected by warnings such as "stay away from the medicine" or "the medicine is dangerous" and therefore it is useful to avoid such statements.<sup>37</sup>

The second theme that emerged as a result of the focus group discussions was "physical characteristics of the pharmacy/pharmacist". In the first sub-theme students studying in both departments offered suggestions for arranging the physical environment of the pharmacy in a way that

would be more attractive and creative in order to attract children's attention. Regarding the environmental arrangement of the pharmacy, the students reported that the counters in the pharmacies are not suitable for the child's height because they are a physical barrier to communication and suggested the use of stools when communicating with them. In addition, they suggested creating a special playground for children in the pharmacy, hanging posters, and using wallpaper made of cartoon characters. They emphasized that with the special and attractive areas created, children will develop positive thoughts towards the pharmacy. Abraham et al. stated that children who come to the pharmacy seem distracted or uninterested with an unfavorable pharmacy environment. They pointed out that the pharmacy environment, the availability of child-friendly materials and technological devices, the attitude and communication approach of the pharmacist are the factors which facilitates interaction with the child.<sup>21</sup> On the other hand, in a study conducted on adults, it was stated that pharmacy atmosphere is one of the factors affecting patient loyalty.<sup>38</sup> Cagirci also stated that pharmacists are aware of this situation and give importance to the physical appearance of the pharmacy.<sup>39</sup>

Regarding the "pharmacist's physical characteristics" sub-theme, it was noted that most of the students studying in both disciplines had similar perceptions about the physical characteristics of the pharmacist. Students stated that children feel fear and anxiety towards pharmacists. The white coat was emphasized as a reason for fear and anxiety towards the pharmacist. Only one pharmacist student argued that it is not a problem when a pharmacist wears a white coat. The same student stated that it is important to raise awareness of the child that pharmacists and doctors are people who are healers and should not be feared. Abraham et al. found that children might hesitate to talk to pharmacy staff or they would be upset when discussing their illness or drug information with pharmacists due to the busy pharmacy environment or "white coat" appearance of the pharmacist.<sup>21</sup> This is the only study we could find specific, on fear from pharmacists which supports the results of our study. Meanwhile in another study Gerges et al. had indicated that pharmacists did not distinguish between pain in adults and children but identified that fear was important in children in their study of exploring the experiences and practice of pharmacist vaccinators.<sup>40</sup> There are a lot of studies in the literature highlighting the fear and anxiety of children against doctors and dentists wearing white coats. For instance, Fiset reported that it is very common for children to feel anxiety towards doctors.<sup>41</sup> It has been reported that the increased fear of the dentist may be due to previous painful experiences in the clinic.<sup>42</sup> De Jongh, on the other hand, stated that children associate the identity of a physician with a white coat depending on their past experiences, and that fear develops in most of them due to negative cognitive experience.<sup>43</sup> In the current study, students suggested a change in the clothing of pharmacists in order to eliminate the fear and anxiety sensitivity of children towards the pharmacist and stated that it would be appropriate for them to dress in a more colorful and different way. Hemphill stated that colors have a strong effect on emotions,<sup>44</sup> Umamaheshwari et al. revealed that children associate their emotions with colors, and that while they are fond of some colors, they do not like others.<sup>45</sup> These studies suggest that colors have a positive effect on children. Petrilli et al., on the other hand, emphasized that patient satisfaction is important for healthcare providers in the ever-changing healthcare field, and therefore, physician clothing preferences have become an important topic of interest as a way to improve first impressions and perceptions of the quality of care.<sup>46</sup> In some studies, it has been reported that physicians prefer to wear colorful clothes for children who are worried when visiting the physician.<sup>47,48</sup> Asokan et al. reported that most of the children who experienced anxiety with their dentist are in favour of the fact that the dentist wears colorful clothes, while the children who did not experience anxiety preferred the conventional clothing.<sup>49</sup> Gündüz et al. stated that white coat factor was a cause for raising the fear of the doctors in children.<sup>31</sup> Kusu et al. expressed those children who had fear from doctors preferred that doctors wear colored coats.<sup>48</sup> It is noteworthy that studies on white coats in the field of pharmacy were conducted on students and adults. Cretton-Scott et al. measured adult patients' perceptions of associating professionalism with the



pharmacist's clothing by showing pictures. The results were in line with adults' preference for pharmacists wearing white coats.<sup>50</sup> In other words, while white coats can be a factor for anxiety for children, it seems it can be reassuring for adults.

## 5. Conclusion

The results of the study showed that both pharmacy and child development undergraduate students were aware of the importance of communication of the pharmacist with the child. Collaboration of these two disciplines can strengthen pharmacist child communication which is accepted as a factor for adherence to drug therapy. The students from both disciplines can cooperate in counselling children during internship programmes together as well as having common elective courses. This study can lead to future research opportunities too. With the contributions of both fields, communication training guidelines can be prepared and applications can be carried out. It will be socially beneficial for both groups of students to provide education for children in schools, hospitals and libraries together. Collaboration with non-governmental organizations, health authorities and universities should be used to train children, parents and pharmacists with a holistic approach. The success of the present study can be an indication for further projects. Increasing such studies could not only increase the number of study projects in different fields and raise more well-equipped students as professional staff in the future but contribute to the development of a more effective approach to children and families as well. Children are likely to have certain perceptions about the pharmacist's white coat. Studies targeting on this topic can be planned and preferences can be examined in order to eliminate children's fears and increase patient satisfaction. As far as we have seen, there is no specific study about pharmacist's white coat appearance. Pharmacies can make physical arrangements to improve children's satisfaction and confidence. It is thought that this study, which compares the observations, awareness and suggestions, will lead to cooperation possibilities and other multidisciplinary researches by using the synergies of the two fields.

### 5.1. Limitations

During the planning phase of the the research, the aim was the organization of a project for the undergraduate students of pharmacy and child development who would work together. For this purpose, even the volunteering students were identified. Exploration of students' knowledge and experiences about communication of pharmacist with the child was the objective of this study. Focus group interviews were planned face-to-face primarily. However, due to the covid-19 pandemic universities were suddenly closed. For this reason, in the study, the focus group interviews with students were conducted *via* zoom. The closure of schools during the pandemic process, the fact that some of our students were in different provinces and the start of online education in this process caused communication difficulties with our students after the focus group meetings. It took time for the Zoom recordings to be listened and translated into written form. The written forms were read again and compared. Incomprehensible expressions were reviewed again. These processes also took a lot of time. Therefore, we had problems in reaching the students again. As a result, we were not able to do the member control. One of the limitations of this study was the inability to control members.

In the study, thoughts about wearing a white coat became a theme that caught our attention as a result of focus group discussions. However, we could not determine the opinions of the children about the white coat. We are still curious about the children's thoughts on the white coat. If schools were open at that time, focus group interviews could be conducted with children in schools and pharmacies. Children's opinions about white coat could be obtained using a questionnaire. However, due to the pandemic, many measures were taken. Children were not taken out unless it was necessary, and schools were closed because of the transition to online education. In the future, we will plan a separate study to determine

children's views on the white coat and pharmacy environment. Thus, we can have the opportunity to compare the views of the students in this study with the views of the children. This can be considered as another limited aspect of the research.

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Ethic

Ethical Committee approval has been assigned by the Istinye University Ethical Committee on 26.04.2021 protocol number 21–28.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.rcsop.2023.100272>.

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