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Message from the Editor,

I am very pleased to inform you that we have published the third issue in 2024. As an editor of International Online Journal of Primary Education (IOJPE), this issue is the success of our authors, very valuable reviewers who undertook the rigorous peer review of the manuscripts, and those of the editorial board who devoted their valuable time through the review process. In this respect, I would like to thank to all reviewers, researchers and the editorial board members. The articles should be original, unpublished, and not in consideration for publication elsewhere at the time of submission to International Online Journal of Primary Education (IOJPE). For any suggestions and comments on IOJPE, please do not hesitate to send me e-mail. The countries of the authors contributed to this issue (in alphabetical order): Bulgaria, Cameroon, and Turkey.

Prof. Dr. Nergüz BULUT SERİN

Editor in Chief

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WHOLE-CLASS AUTOMATIC PROMOTION IN THE PRIMARY SCHOOL AND PUPILS' LITERACY ACHIEVEMENT

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Abstract

The present study had two research questions to investigate whole-class promotion in primary school and pupils' achievement in literacy. The study adopted the cross-sectional survey research design. The target population was composed of all teachers and pupils in primary schools in Fako Division, in Cameroon, while the accessible population was made up of all Classes Four (Grade 4), Five and Six pupils, and 60 teachers, selected using purposive sampling techniques. The instruments for data collection were a structured questionnaire and an interview guide. The descriptive statistical tools used were frequency count, percentages, and multiple response sets while Spearman's rho test was used in testing the study's hypotheses. The findings of the study indicated that teachers' use of alternative resources has a significant effect on pupils' literacy achievement. Findings also indicated that remedial teaching has a significant effect on pupils' literacy achievement. Some recommendations included both trainees and qualified teachers to receive more training regarding alternative resources and remedial teaching.

Keywords: Whole-class promotion, alternative resources, remedial teaching.

INTRODUCTION

Whole-class automatic promotion is defined by Chohan and Qadi (2011) as practice in both primary and secondary schools where learners move from a lower class or grade to an upper one notwithstanding their achievement. Whole-class promotion policy has been dated as far back as the 1930s (Steiner, 1986), and it was adopted in the interest of learners' psychological plus social well-being. However, whole-class promotion is a controversial policy for and against its practice of class (grade) retention or promotion. Okurut (2015) argues that both empirical and non-empirical studies seem to indicate that the impact of whole-class promotion policy is mixed and inconclusive. Arguments supporting a better policy than class or grade retention fall into three categories, including enhancement of education quality, improving internal efficiency of education and personal development of learners.

Ndaruhustse (2008) points out that in enhancing the quality of education repetition does not improve achievement of learners who are low-achievers, nor does repetition reduce the range of abilities, since each (class or grade) would carry the retained student into the next year as a source of a difference in ability. To Verspoor (2006) and Ndaruhutse (2008), regarding improving, internal efficiency of education, whole-class promotion policy, there would be the possibility of saving costs for both the government and education stakeholders. What is more, reduction or elimination of class (grade) repetition increases completion rates by reducing student dropout rates, and increasing the number of years low-achievers spend in school. With reference to personal development of learners Eide & Showalter (2001) argue that repetition of class (grade) has a negative self-esteem on learners since there might be stigmatization which impairs their natural ability to relate with peers as well as prolong their actual time of completion.

On the other hand, whole-class promotion, Koppensteiner (2014), Taye (2003), and, Chohan and Qadir (2011) counter, such a promotion negatively affects the overall quality of education for there is little competition amongst peers and no learner nor teacher motivation to enhance achievement. Therefore,

class (grade) repetition is perceived as leading improvement in content learning achievement (Brophy, 2006). However, these claims are not yet conclusive.

Still on the debate about the pros and cons of class (grade) repetition, Ndaruhutse et al. (2008) point to the inconclusive nature of both claims. The authors outline the pros of repletion as advantageous under some situations such as, firstly, where learners are not meeting with their peers and fall short of acquiring expected content, repetition would be beneficial to such learners. Secondly, repetition might be necessary for very young or immature for their immature aged learners. Taking over a year is viewed would be giving them the opportunity to feel more settled and secured. Finally, if there is a wide variety of ability in a class (grade), it may be of benefit to teacher and the rest of the remaining learners for weak learners repeat, thus creating a more homogenous year group.

On the other hand, there are arguments against class (grade) repetition, claiming that it has plenty of negative impact on learners such as affecting self-esteem and motivation that may make them see themselves as failures (Kyereko et al., 2022; Ndaruhutse et al., 2008). Another reason put forward is that going through the same content with probably the same teacher may affect learners' interest and focus. Lastly, it is argued that repetition does not investigate reasons behind learners' low achievement and mere repetition may not ring in any improvement.

According to Troncin (2006), learning difficulties are perceptible in class repetition. However, this may be a 'false' measurement tool of school failure for it is likely that any repeating learner would be susceptible to ongoing difficulties. Thus, learners repeating the year in same way rather than providing extra support for support would likely notice little change. It may be because of Troncin's (2006) argument that low-achieving pupils are recommended for remedial classes.

Whole-class promotion in Cameroon primary school

The duration of the UN Millennium Development Goals (MDGs) embraced and endorsed by the international development community following the Millennium Summit of September 2000, from 1990- 2015, left an indelible mark on the quality of education in Cameroon educational system, specifically on how to attribute class or grade promotion to a higher level.

Before the international advocacy of the Millennium Development Goals (MDGs) Project, repetition in the Cameroon primary school sector was a policy (Lyonga & Fosso, 2020). However, by 2006, there was a shift from this position with influence of MDGs Target 2 which aimed at ensuring that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling (Achieve Universal Primary Education). This Declaration was the conclusion arrived at in Jomtien in Thailand in 1990, and in order to achieve education goals there was the Dakar World Education in 2000, in Senegal, where a new set of goals was set to be attained by 2015. There were several goals under Target 2 Education, but this research focuses on improving all aspects of the quality of education and ensuring excellence for all, so that recognised and reasonable learning outcomes are achieved, especially in literacy.

To tackle the issues of class or grade repetition and accessibility to primary schooling universally, the Cameroon government concluded that class retention is another way of discriminating against accessibility to many pupils. Bearing these arguments, the government of Cameroon in partnership with the African Development Bank (ADB), experimented in some pilot schools, on reduction of repetition to about 10%, unlike 40% before. This was to be carried out by introduction of pedagogic and administrative elements through a Ministerial Order № 315/B1/1464/MINEDUB of 21st February 2006 (Nalova, 2016; Mambeh, 2018, and Lyonga & Fosso, 2020). Mambeh (2018, p.64-65) states that:

> This text amongst others prescribes the following: (1) the teaching methods should be active and adapted to the diversity of pupils; (2) assessment should be diagnostic, formative or criterion-referenced within levels; (3) assessment should enable teachers to adapt their lessons to the specific needs of pupils; (4) promotion of pupils is automatic within a level. However, a pupil can be authorized to exceptionally repeat upon request from the parent of the concerned pupil.

In Cameroon primary schooling lasts six years with each year labelled into Classes. The new structuring divides the six years into three Levels, partitioned thus, Level I (Classes 1 and 2), Level II (Classes 3 and 4), and Level III (Classes 5 and 6). Compensatory or remedial teaching is recommended for slow learners but promotion from one class to another is automatic. However, pupils may repeat only if moving from one Level to the next, even though remedial teaching outside the official school time, is suggested to compensate for any low achievement (MINEDUC, 2010)

Purpose of the Research

The purpose of the current study is to find out if the practice of whole-class promotion in primary school enhances pupils' literacy achievement. Specifically, it is the purpose of this research to focus on alternative resources and remedial teaching how they affect primary school pupils' literacy achievement.

Research Questions

1. To what extent do alternative resources affect primary school pupils' literacy achievement?
2. To what extent does remedial teaching affect primary school pupils' literacy achievement?

Hypotheses

H_{o1}: Alternative resources do not significantly affect primary school pupils' literacy achievement.
H_{a1}: Alternative resources significantly affect primary school pupils' literacy achievement.
H_{o2}: Remedial teaching does not significantly affect primary school pupils' literacy achievement.
H_{a2}: Remedial teaching significantly affects primary school pupils' literacy achievement.

Conceptual, Theoretical and Empirical Basis of the Study

Definitions of literacy are difficult to state with exactitude. Some definitions conceive of literacy as a social construct, a complex idea that means different things to different cultural group at different times. Therefore, literacy is a relative term and dynamic. Literacy, in its lay understanding, is the ability to read and write; it is also an integrated complex of language and thinking processes and skills, incorporating a range of habits, attitudes, interests and knowledge, serving a range of purposes in different context (UNESCO, 2008, p.18). A person might be functionally literate and can engage in all those activities in which literacy is required for effective functioning of his or her group and community and also for enabling them to continue to use reading, and writing for their own and the community's development.

Literacy refers to a set of varied capabilities or to a single capability that can be quantified in a straightforward and comprehensive way (Lo Bianco & Freebody, 2001, p.20). The definitions of reading literacy have changed over time in accordance with the needs of the global society, the demands for economic development, and the advances in the research and measurement of literacy itself.

Operationally, in this research, literacy is considered as the ability to read, write, speak and listen properly. The attribute of literacy is generally recognised as one of the key educational objectives of compulsory schooling.

Whole-class automatic promotion

Repetition or retention, according to Ndaruhutse et al. (2008), is the practice of taking over the academic year for pupils who are judged to be lagging behind of the curriculum or syllabus. They do not achieve a cut-off point. Such pupils repeat the school year while their peers get promoted to a higher level. This practice is contrasted with automatic promotion which is allowing pupils to continue in spite of their achievement level.

Whole-class or automatic academic promotion occurs when pupils progress from a lower level to a higher level irrespective of their achievement. Okurut (2015); Ellis-Christensen (2003) and Albridge and Goldman (1999) argue that whole-class promotion takes pupils from one class or grade to the a higher even when they may have shown sufficient competence of the level. Indeed, poor academic achievement is not taken into account (Griffith, 2006).

Arguments for and against automatic promotion are centred on its credibility as a viable alternative to grade retention in the search for efficiency and better learning outcomes (Chohan & Qadir, 2011). This is evident in empirical studies.

Alternative Resources (Teaching Learning Resources)

Alternative resources especially in the context of developing countries with large class-sizes are provided for the improvement of pupils' reading and writing skills at primary levels of education. Alternative resources or teaching- learning resources form the centre of attraction to children during the learning process. They arouse the child's interest promoting the learning. Kie (2009) observes that teaching-learning materials supplement the description of concepts by the teacher thereby helping to break the monotony of explaining words and processes that seem difficult to children. Resources also save on teaching time as they make explanation easier, stimulate children's imagination, promote accuracy in describing concepts, cultivate social skills when children interact and work together in groups and finally give the children an opportunity to learn through a variety of senses resulting into high retention of information and skill learned

Remedial Teaching

Remedial teaching is defined as interactions which are designed to cater for the needs of children unable to keep pace with the teaching-learning process in a normal classroom (Schwartz, 2012). Remedial teaching acts as a safety valve for the learners who are behind the expected level of achievement. Schwartz (2012) says remedial education programme is made up of educational interventions aimed at addressing learning needs of a targeted group of children who are lagging behind academically or not mastering specific competencies. Remedial education can be implemented as a standalone programme in or outside of school hours, integrated in programmes that are implemented as components of a more comprehensive educational programme.

One important feature of remedial education programmes is determining the competencies that need improvement and the learning levels of programme participants at the time of selection, during, and after the intervention. It has been argued that programs have to be explicit, systematic and focused to be effective. Remedial teaching involves diagnosis of specific difficulties, provide suitable measures and provide support to students to help them master the difficult concepts and to prevent previous mistakes from reoccurring in the future (Burris, 2009). Oyedele (2016, p.31) advises that when low achievers are identified by the teacher, remedial teaching should be introduced within the classroom where necessary; withdrawal from the classroom for small group individual teaching and an evaluation that will be conducted during and after the implementation of remedial instruction to examine the actual effectiveness of the remedial teaching (Maawa, 2019).

Empirical studies

Alternative Resources and Pupils' Literacy Achievement

Okongo, Ngao, Rop and Nyongesa (2015) carried out research on effect of availability of teaching and learning resources on the implementation of Inclusive Education in Pre-School Centers in Nyamira North Sub-County, Nyamira County, Kenya. The study aimed at finding out whether availability of teaching and learning resources influenced implementation of inclusive education in pre-school Centers in Nyamira North sub-county. The study employed descriptive survey research design. The target population was 134 head teachers in 134 pre-school centers, 402 pre-school teachers, 12 Education Officers and 938 pre-school parents. Sample size was 40 pre-school centers and 40 head teachers which were randomly sampled to represent 30% of the centers. Further, 134 pre-school teachers and 270 pre-school parents were sampled through stratified random sampling and 12 Education Officers sampled by census sampling. Data was collected using questionnaires and observation check-lists. Descriptive statistics of means, percentages and weighted averages were used in analysing the data. Findings revealed that there were inadequate teaching and learning resources at pre-school centers in Nyamira North sub-county. 78 percent of the respondents revealed that inadequate resources affected the implementation of inclusive education. The study recommends that adequate teaching and learning resources should be provided to ensure effective implementation of inclusive education and more funds

to be allocated for procuring teaching and learning materials for Special Needs Education (SNE) learners.

Remedial Teaching and Pupils' Literacy Achievement

Maawa and Cruz (2019) carried out a study on remedial and corrective feedback strategies for improving students' English language proficiency. The study used descriptive research design and purposive sampling was used for the selection of English teachers. Students were surveyed and interviewed. Descriptive statistics were used to analysed the data gathered using researcher-made instrument. Findings showed that peer support programme and handling students' behaviour problems were the most commonly used remedial strategies by the English teachers whereas, explicit correction, clarification request, recast, elicitation and paralinguistic signals were the commonly used corrective feedback strategies in teaching English. Cross-examination in the students' grades indicates positive effect of remedial and corrective feedback strategies in improving the English language proficiency of the students. The teachers knew very well how to use corrective feedback strategies although some might not be aware that they were using it.

METHOD

The research design was the cross-sectional survey design, in which the study is carried out at one point or over a short period. The target and accessible population were made up of pupils and teachers who attended and taught in primary schools in Buea, Limbe 1 and Tiko Sub Divisions of the South West Region, Cameroon.

The sample population was composed of 30 pupils from Classes 4 to 6 and 60 teachers. In this study, the simple random sampling and purposive sampling technique was used. The simple random sampling was used to select the area of study. The researcher also employed the purposive sampling technique for selecting the schools. Class 4, 5 and 6 pupils were equally selected using purposive sampling techniques.

The main instrument used for data collection was a Likert Scale questionnaire and an interview guide. The items on the questionnaire were based on the stated research questions. The questionnaires were administered to teachers and pupils in their primary schools. The interview guide items were and explained to pupils.

Validation of the instrument

The validity of the instruments was ensured through the face, content and construct validity were in, a number of steps were taken.

Face Validity

After designing the questionnaire, the researcher administered them to a sample of experienced researchers for review. The suggestions were heeded to for improvement of the instrument.

Content Validity

The researcher then submitted another copy to the experienced researchers in curriculum studies and teaching who checked the content validity of the instrument by evaluating the content of the instrument. Some questions were modified after validity of the content of the questionnaire.

Construct Validity

The researcher considered some key concepts and phrases by coming up with clear and precise meaning in the context of the study.

Reliability of Instrument

Table 1. Reliability analysis of the instrument.

Variables	Cronbach Alpha Coefficients	Variance	No of items
Use of alternative resources	.705	.016	7
Remedial teaching	.721	.069	7
Mastery of learning	.738	.042	7
Pupils literacy achievement	.701	.032	7
Overall reliability analysis value	**.729**	**.077**	**28**

The Cronbach coefficient value for all the variables was satisfactory with the coefficient values ranged from .701 to .738 which are all above .7. The overall coefficient value was .729 which is above the recommended threshold of .7. Therefore, this implies that the respondents were consistent and objective in their responses thus, making the questionnaire and interview guide valid and reliable for the study.

Figs 1 and 2 show the demographics of the study.

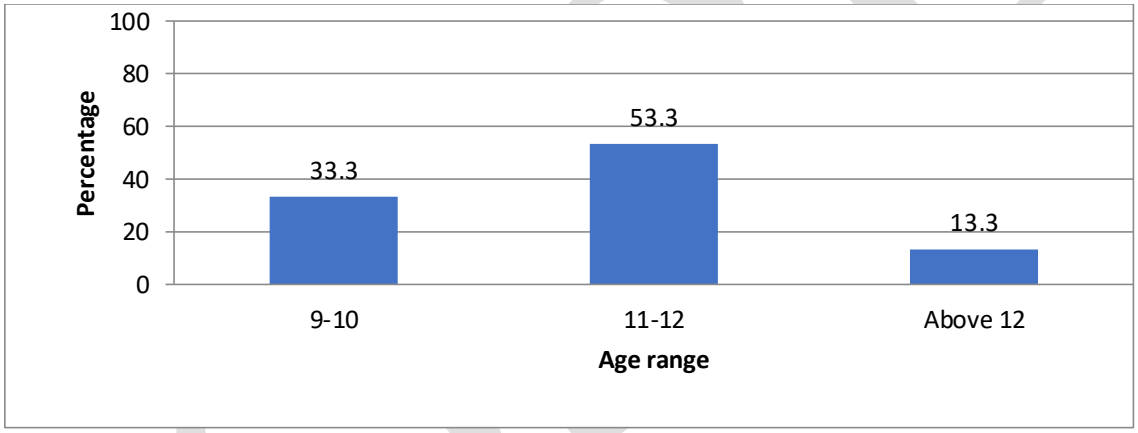

Figure 1. Distribution of pupils by age range

Figure 1 above shows the distribution of the pupils by age, 33.3% (10) of them are 9-10 years of age, 53.3% (16) of them are 11-12 years of age and 13.3% (4) of them are above 12 years of age. The majority of respondents are aged 11-12 meaning they might have been retained once because the age of graduating from primary school in Cameroon is between 10-11.

Figure 2. Distribution of pupils by Class

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Based on Class, 16.7% (5) of the pupils are in Class 4, 33.3% (10) of them are in Class 5 and 50.0% (15) of them are in Class 6. Class 6 marks the end of the primary cycle and end-of-course examination is sat.

RESULTS

To what extent do alternative resources affect primary school pupils' literacy?

Table 1. Teachers' use of alternative resources.

Items	Stretched				Collapsed	
	Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly Disagree (SD)	SA/A	D/SD
I use textbook to teach	39 (65.0%)	19 (31.7%)	1 (1.7%)	1 (1.7%)	58 (96.7%)	2 (3.3%)
I use more than one resources during the teaching learning process	31 (51.7%)	24 (40.0%)	4 (6.7%)	1 (1.7%)	55 (91.7%)	5 (8.3%)
*I have never use cartoon video to teach the pupils	6 (10.0%)	11 (18.3%)	7 (11.7%)	36 (60.0%)	17 (28.3%)	43 (71.7%)
Whenever I use diagrams to teach, it makes the class lively	32 (53.3%)	26 (43.3%)	1 (1.7%)	1 (1.7%)	58 (96.7%)	2 (3.3%)
Whenever I use charts, pupils easily grasp the concepts	36 (60.0%)	21 (35.0%)	2 (3.3%)	1 (1.7%)	57 (95.0%)	3 (5.0%)
I make sure every pupil has at least one workbook for each subject	7 (11.7%)	20 (33.3%)	24 (40.0%)	9 (15.0%)	27 (45.0%)	33 (55.0%)
*My school has many teachers	33 (55.0%)	23 (38.3%)	2 (3.3%)	2 (3.3%)	56 (93.3%)	4 (6.7%)
Multiple Response Set (MRS)	**181 (50.3%)**	**117 (32.5%)**	**43 (11.9%)**	**19 (5.3%)**	**298 (82.8%)**	**62 (17.2%)**

* Coding reverse during calculation of MRS or item exclude from MRS calculation.

Based on teachers' use of alternative teaching resources, findings indicate that a majority of the teachers 96.7% (58) accepted that they use text books. Findings also show that a majority of the teachers 91.7% (55) accepted that they use more than one resource during the teaching learning process. The findings also show that a majority of the teachers 71.7% (43) accepted that they have cartoon video to teach.

The findings also show that a majority of the teachers 96.7% (58) accepted that they do use diagrams to teach. Furthermore, the findings also indicates that a majority of the teachers 95.0% (57) accepted that they use charts to teach. Finally, the findings also show that 45.0% (27) of the teachers accepted that they use workbook for each subject to teach.

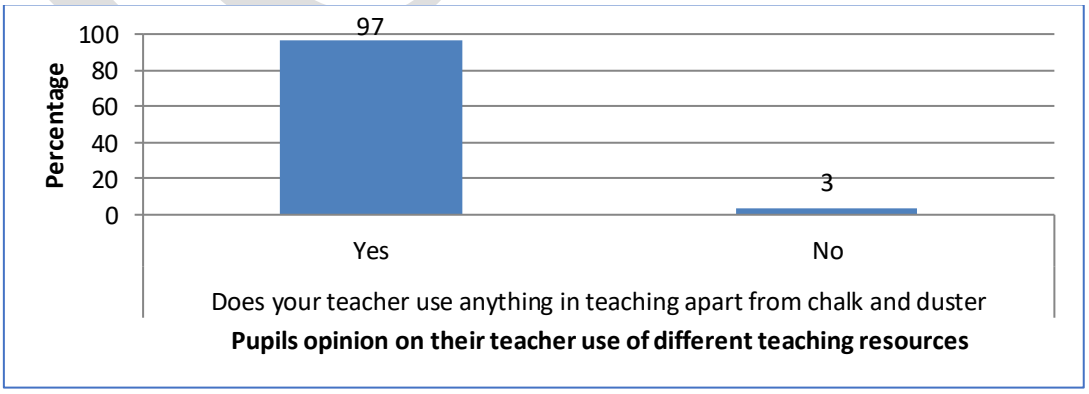

Figure 3. Pupils' opinion on teachers' uses of different teaching resources.

Questioned about teachers' use of different teaching resources, findings show that a majority of them 97.0% (29) agreed that their teachers use other teaching aids apart from chalk and duster while just 3.0% (1) of them denied. These teaching resources apart from chalk and duster use are audio tapes, diagrams,

textbooks, real objects, charts, workbooks and video tape. Textbooks, diagrams, charts and real objects were the most mentioned while audio and video tapes were the least mentioned.

Testing of hypothesis one (H_o1): Alternative resources do not significantly affect primary school pupils' literacy achievement

Table 2. The effect of teachers' use of alternative teaching resources on pupils' literacy achievement.

		Use of alternative teaching resources	Pupils' literacy achievement
Spearman's rho	R-value	1.000	.280*
	P-value	.	.030
	N	60	60

*Correlation is significant at the .05 level (2-tailed).

Statistically, findings indicate that teachers' use of alternative resources have a significant effect on pupils' literacy achievement (P=.030, <.05). The positive sign of the correlation value (R=.280*) implies that pupils literacy achievement is more likely to increase when teachers use different resources.

Research Question Two: To what extent does remedial teaching affect primary school pupils' literacy achievement?

Table 3. Teachers' organization of remedial classes.

Items	**Stretched**				**Collapsed**	
	Strongly Agree (SA)	**Agree (A)**	**Disagree (D)**	**Strongly Disagree (SD)**	**SA/A**	**D/SD**
*Extra classes are not necessary	16 (26.7%)	28 (46.7%)	13 (21.7%)	3 (5.0%)	44 (73.3%)	16 (26.7%)
I usually organize extra classes only after school	11 (18.3%)	21 (35.0%)	23 (38.3%)	5 (8.3%)	32 (53.3%)	28 (46.7%)
I organize extra classes at least twice a week	13 (21.7%)	23 (38.3%)	19 (31.7%)	5 (8.3%)	36 (60.0%)	24 (40.0%)
I do not organize extra classes every week due to limited time	18 (30.0%)	25 (41.7%)	12 (20.0%)	5 (8.3%)	43 (71.7%)	17 (28.3%)
I do not organize extra classes for free	19 (31.7%)	20 (33.3%)	11 (18.3%)	10 (16.7%)	39 (65.0%)	21 (35.0%)
I usually encourage fast learners to help teach their slow peers	27 (45.0%)	29 (48.3%)	3 (5.0%)	1 (1.7%)	56 (93.3%)	4 (6.7%)
I only organize extra classes for slow learners.	12 (20.0%)	9 (15.0%)	26 (43.3%)	13 (21.7%)	21 (35.0%)	39 (65.0%)
Multiple Response Set (MRS)	**103 (24.5%)**	**140 (33.3%)**	**122 (29.0%)**	**55 (13.1%)**	**243 (57.9%)**	**177 (42.1%)**

*Coding reverse during calculation of MRS.

Based on the teachers' use of remedial teaching, findings show that 53.3% (32) of the teachers accepted that they organise extra classes only at the end of the school day. Findings also show that 60.0% (36) of the teachers accepted that they organise extra classes at least twice a week. Further, the findings show that 65.0% (39) of the teachers agreed they do not organise tuition free extra classes. In addition, findings show that 93.3% (56) of the teachers accepted they usually encourage fast learners to help slow peers. Finally, findings also show that 65.0% (39) of the teachers are of the opinion that they do not only organise extra classes for slow learners. In aggregate, findings show that 57.9% of the teachers organise remedial teaching while 42.1% do not. This overall finding is also presented on the Figure 4 below.

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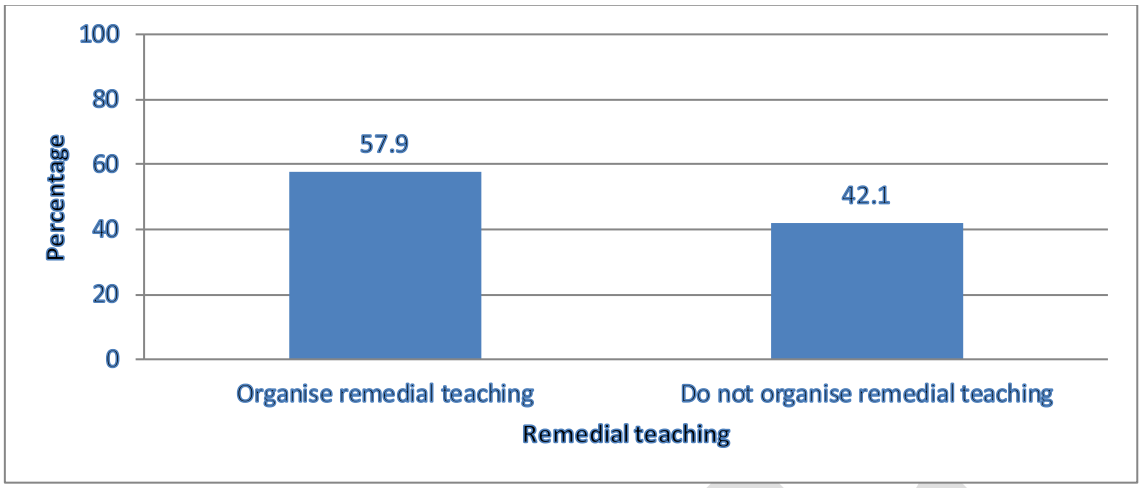

Figure 4. Distribution of teachers by organization of remedial classes.

It is realised that a huge percentage of respondents are yet to implement Ministerial Order N◦ 315/B1/1464/MINEDUB of 21st February 2006.

Pupils' opinion was sought concerning remedial teaching. Results can be seen on Figure 5 below.

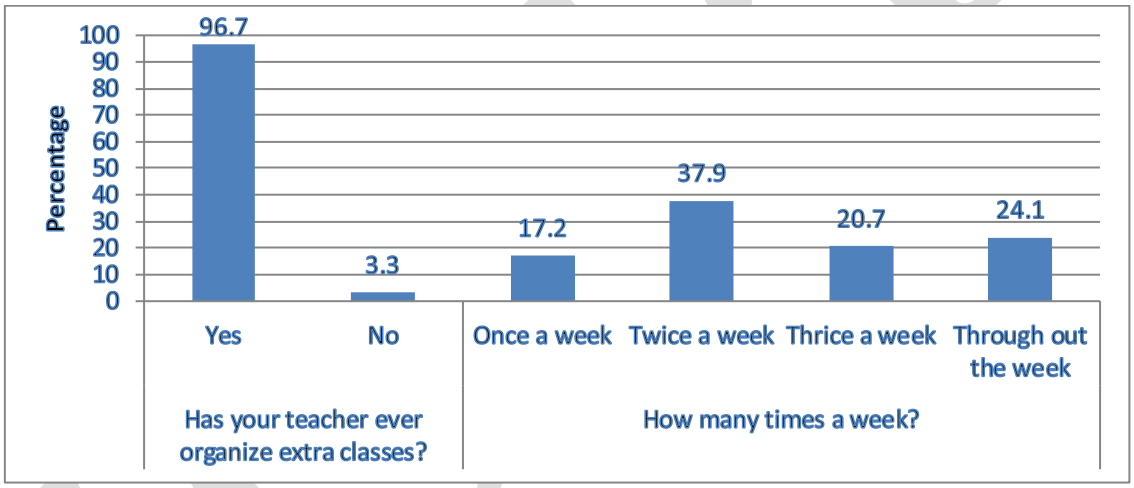

Figure 5. Pupils' opinion on remedial teaching.

Based on the pupils' opinion on extra classes, findings show that the majority of them 96.7% (29) said that their teachers organise extra classes and for frequency of classes per week, 24.1% (7) of them said throughout the week, 20.7% (6) of them said three times a week, 37.9% (11) of them said two times a week and 17.2% (5) of them said once a week. However, there appears to be a dichotomy between response in Figs 4 and 5. While the former claims over 42.1% of teachers do not organise remedial classes, in the latter pupils say 96.7% of teachers have organised extra classes. One explanation may be due to the fact that pupils perceived of both practices as very different.

Testing of hypothesis two (H_o2): Remedial teaching significantly affects primary school pupils' literacy achievement

Table 4. The effect of remedial teaching on pupils' literacy achievement.

		Remedial teaching	Pupils' literacy achievement
Spearman's rho	R-value	1.000	.272*
	P-value	.	.036
	N	60	60

*Correlation is significant at the .05 level (2-tailed).

Statistically, findings show that remedial teaching has a significant effect on pupils' literacy achievement (P=.036, <.05). The positive sign of the correlation value (R=.272*) implies that pupils literacy achievement is more likely to increase when teachers do remedial teaching. Therefore, the null hypothesis was rejected while the alternative hypothesis that states that remedial teaching significantly affects primary school pupils' literacy achievement was accepted.

DISCUSSION, CONCLUSION, and SUGGESTIONS

Alternative resources and the primary school pupils' literacy achievement

Statistically, findings show that teachers' uses of alternative resources have a significant effect on pupils' literacy achievement. This is in congruence with Sitati, et al (2017) who argued that alternative resources especially in the context of developing countries with large class sizes are provided for the improvement of pupils' reading and writing skills at primary levels of education since they arouse the child's interest promoting the desire to learn.

Data concluded that teachers used more than one resource during the teaching learning process and whenever they used diagrams to teach, it makes their class lively. This is in line with Olumiran, et al. (2010) as they opined that the resource used during the teaching learning have direct contact with the sense organs. Pupils are able to use a combination of senses (smell, hearing, touch, taste and sight) for easier and better acquisition of concepts and facts they are being taught. Pupils can see as a whole certain relationship that are difficult to conceptualise in parts. This is supported by James (2001) who argued that alternative resources supply concrete base for conceptual thinking, have high degree of Interest for pupils, make learning more permanent, offer a reality of experiences which stimulates self-activity on the part of pupils, develop a continuity of thought, contribute a growth of meaning and provide experiences not easily obtained through other materials.

Findings revealed that alternative resources help the teacher in providing the means of widening his pupils learning experience, providing his pupils with meaningful source of information; provide the teacher the means of exposing the pupils to a wide range of learning activities and increase the efficiency of the teacher by providing tutorials and response guidance for individual pupils and small groups.

Findings revealed that alternative resources have a high degree of interest for the learner; for they offer a reality of experience, which stimulates self-activity on the part of the pupil. It develops a continuity of thought, this is especially true of motion pictures, as they provide experiences not, easily obtained through other materials and contribute to the efficiency, department and variety of learning. This is supported by Ololobou, Jacob and Ndazhaga (1999) as they opined that a high degree of interest for the learner by teachers so that alternative resources can be effective which will stimulate self-activity pupils.

Remedial teaching and pupils' literacy achievement

Statistically, findings show that remedial teaching has a significant effect on pupils' literacy achievement. This is in line with Schwartz (2012) who argued that remedial education programmes are aimed at addressing learning needs of a targeted group of children who are lagging behind academically or not mastering specific competencies, starting in the early grades. She opined that remedial education can be implemented as a standalone program in or outside of school hours, integrated in programs that are implemented as components of a more comprehensive educational programme.

Findings also revealed that teachers usually organize extra classes only after school. This is supported by Houtveen & van de Grift (2007) as they found out that teachers always used remedial teaching to facilities pupils' achievement. They opined that an important feature of remedial education programs is determining the competencies that need improvement and the learning levels of programme participants at the time of selection, during, and after the intervention. It has been argued that programs have to be explicit, systematic and focused to be effective: for example, Houtveen & van de Grift (2007) found that children who fail to learn how to read in the first grade as expected, can significantly improve reading and spelling from remediation that is explicit, systematic, and focused on both word level skills and frequent opportunities for text-based reading.

Revelation from the study indicated that teachers do not organise extra classes every week due to limited time and their remedial classes are not free which helps the pupils to meet specific needs. This is supported by Burris (2009) that remedial education is a multifaceted approach, tailoring remedial intervention plans to a child's specific needs. It makes use of one-on-one instruction, small group instruction, written work, verbal work and computer-based work. Remedial teaching focuses on skills rather than on content and these skills include visual discrimination, perceptual organisation, laterality, sequencing, abstract reasoning, auditory processing, sound recognition, blending, segmenting, phoneme manipulation, mathematical operations, focusing and eye tracking.

Data of the study showed that teachers usually encourage fast learners to help teach their slow peers and also organize extra classes for slow learners. This is in line with Schwartz (2012) who supported that peer tutoring work together in a learning task and may help students to develop their sense of self-esteem and responsibility being active participants on their peer's learning. This is also in line with Slavin, et al (2009) as they argued that providing one-to-one, phonetic tutoring to pupils' who continue to experience reading difficulties can result in positive effects and improve reading performance. Some parents opt for paid private one-to-one tutoring to address this shortfall (Drew, 2020). Low income and disadvantaged pupils' who are struggling academically can only rely on support that does not incur any furthers costs and in most cases, there are scarce resources to implement programs outside the regular classroom (Schwartz, 2012).

The purpose of the study was to investigate the how whole-class promotion affects primary school pupils' literacy achievement. The indicators were; alternative resources, remedial teaching, and how mastery. The findings of the study indicated that teachers' use of alternative resources have a significant effect on pupils' literacy achievement. Findings, further indicated that remedial teaching has a significant effect on pupils' literacy achievement.

Based on the use of alternative resources, it is recommended that teachers should be encouraged and educated on using alternative resources that enhances and attracts the attention of children during the learning process and also arose the interests of the pupils, supplement the description of concepts by the teacher thereby helping to break the monotony of explaining words and processes that seem difficult to the child. They also save on teaching time as they make explanation easier, stimulate children's imagination, promote accuracy in describing concepts, cultivate social skills when children interact and work together in groups using such resources and finally give the children an opportunity to learn through a variety of senses resulting into high retention of information and skill learned. Also, pupils' text books and work book for practice should be provided so they have different presentation of the learning materials for easy understanding.

Based on remedial reading, it is recommended that more remedial education be given to the pupils to ensure that no one is left behind. Educational interventions aimed at addressing learning needs of a targeted group of children who are lagging behind academically or not mastering specific competencies should be enhanced by teachers and the teaching styles and materials should by pupils friendly. Also, remedial reading should be part of the school program and by the teacher so that every pupil can afford. Peer tutoring and team work should be encouraged to allow the pupils learn from each other.

Ethics and Conflict of Interest

All ethical rules were observed at each stage of the research. The author declares that he acted in accordance with ethical rules in all processes of the research.

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STRATEGIES FOR INCLUSIVE EDUCATION AND INTERCULTURAL COMMUNICATION IN PRIMARY SCHOOL

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Abstract

This article explores strategies for inclusive education and intercultural communication in primary schools. The primary objective of this study was to identify effective practices that address the challenges faced by primary school educators, such as inadequate training, limited resources, and managing large class sizes. The study employs a mixed-methods approach, combining qualitative and quantitative data collected through surveys of 75 novice teachers in Sofia, Stara Zagora, and Pazardzhik, Bulgaria. The data were analyzed using descriptive statistics and thematic analysis to identify trends, strategies, and barriers to current practices. The results highlighted the predominant use of differentiated instruction, cooperative learning, and culturally sensitive teaching as key strategies for fostering inclusion and intercultural communication. Based on these findings, this study recommends enhancing teacher training programs, improving access to resources, and promoting co-teaching partnerships between primary and resource teachers to better support inclusive practices in primary education.

Keywords: Inclusive education, intercultural communication, primary teachers.

INTRODUCTION

Inclusive education and intercultural communication are vital components of fostering a harmonious and equitable learning environment for students in primary schools. These concepts are increasingly being recognized as essential in today's globalized world, where classrooms are becoming more diverse. Inclusive education ensures that all students, regardless of their backgrounds or abilities, have equal access to learning opportunities. On the other hand, intercultural communication promotes understanding and collaboration among students from different cultural backgrounds, enabling them to work together effectively and respectfully.

Recent studies have highlighted the growing importance of these concepts in the educational setting. For example, Comia (2021) emphasized that teachers play a crucial role in creating classrooms that celebrate diversity and provide opportunities for all students to thrive. This involves adapting teaching methods to meet the needs of diverse learners and fostering an environment in which differences are respected and valued.

Theoretical Infrastructure of the Research

The theoretical framework for this study is grounded in the principles of inclusive education and intercultural communication, both of which have been supported by extensive research and international policy guidelines. Inclusive education is based on the understanding that education is a fundamental human right, as outlined by UNESCO (2017), which advocates the removal of barriers to education for all students. This concept is further supported by the UN Convention on the Rights of Persons with Disabilities (2006), which emphasizes the need for educational systems to adapt to the diverse needs of students, rather than expecting students to conform to a one-size-fits-all model.

Intercultural communication, as defined by Gudykunst and Kim (2003), involves the exchange of information among individuals from different cultural backgrounds. In the context of education, this concept is crucial for promoting social harmony and reducing cultural bias among students. Recent

research by Banks (2022) underscores the role of intercultural communication in enhancing students' social skills and preparing them for participation in a multicultural society; the integration of these concepts into primary education is not without challenges. Teachers often report difficulties in implementing inclusive practices because of a lack of resources, inadequate training, and the complexity of managing diverse classrooms (Smith & Benavides, 2022). However, recent advancements in educational theory, such as the Universal Design for Learning (UDL) framework, offer promising strategies to overcome these obstacles by promoting flexible teaching methods that can be customized to meet the needs of all learners (Rose & Meyer, 2021).This study builds on these theoretical foundations to explore the current state of inclusive education and intercultural communication in Bulgaria's primary schools. It aims to identify effective strategies and potential barriers that contribute to the ongoing discourse on how to create more inclusive and culturally responsive educational environments.

Inclusive education is a multidimensional and multifunctional concept. The literature offers diverse interpretations, with some researchers focusing on social inclusion (Gerschel, 2005b; Walker & Walker, 1997), others on educational inclusion (Tilstone et al., 1998), and others on the values and principles that support the inclusive approach (Cheminais, 2005, 2006; Clough & Corbett, 2000). These different perspectives reflect the complexity of this concept and the challenges associated with its implementation in the educational system, as affirmed by the National Association for Special Educational Needs (NASEN) in the UK: "Inclusion must cover broad notions of educational access and recognize the importance of responding to diverse needs..." (NASEN, 1998).

Using a human rights-based and social model approach, inclusive education promotes the idea that children should adapt to the educational system, not the other way around. Inclusive education is based on the understanding that all children have the potential to learn, integrating both activities from the sphere of formal education and those related to the child's community (Armstrong et al., 2011). This process supports educational structures, systems, and methodologies in their endeavor to meet the needs of all students, being flexible, dynamic, and constantly evolving depending on the cultural and social context (UNESCO, 2017).

Inclusive education does not allow for disparities in education, discrimination, and exclusion of various groups of children and students based on age, sex, ethnicity, language, disability, etc. (OECD, 2012). Topping and Maloney (2005) consider inclusion as a dynamic process, not a static state, describing it as "a journey, not a destination."

Analogous to learning, which is presented as a continuous process (Booth 2000), inclusive education is an integral part of the continuous improvement of school systems. This is perceived as a key and positive principle for schools engaged in policies to improve educational standards, creating the assumption that an inclusive school is, by definition, a good school (Stainback & Stainback, 1996; Zemelman, 1998).

In recent years, Bulgaria has made substantial progress in the inclusion of children with special educational needs in the mainstream environment (Damyanov, 2010). Despite opposition from staff working in special and segregated schools, an increasing number of parents choose to educate their children alongside other children in mainstream schools and kindergartens. Over time, many mainstream teachers who feel unprepared to work with children with special educational needs in their classrooms have joined the opponents of inclusive education.

Throughout history, a great number of children and youth in Bulgaria have not had equitable access to school due to a variety of challenges related to learning and surroundings. A common theme in the history of society's attitude towards people with disabilities is the presence of various periods of discrimination and rejection that vary in duration and temporal disposition, but are invariably present. (Baeva, 2009). This is a problem not only in Bulgaria but also globally. However, it is our role to change this, as negativity towards difference leads to nothing good.

In inclusive education, the most important thing is to engage all students to ensure, on the one hand, an equal start and, on the other, the best care in their interest. Inclusive education is both a philosophy and a policy that aims to reform mainstream schools and kindergartens and make them accessible to all children so that every child can love school, achieve success there, contribute to society, and prepare in the most comprehensive way for their future social life as an adult.

"Assessment of Educational Inclusion" (Ofsted 2000) says that inclusion refers to:
boys and girls;
Ethnic and religious minorities, Roma refugees
students for whom the national language was not their native language.
Students with Disabilities
Students exposed to a lack of attention or at risk of exclusion.
gifted, talented children.
children in care;
Children with Chronic Diseases
young people caring for others
Children from families under stress.

Pregnant Students and Young Mothers
The British NGO "Save the Children" (2016) also published a statement in its report on the right to inclusive education: "The basic concept underlying inclusive education is that every child has the right to access quality education in the mainstream school system and is capable of learning. In this sense, every child, regardless of differences based on age, gender, ethnicity, disability, or other barriers to learning, can and should be educated in mainstream school. Inclusive education aims to meet the needs of every child, paying special attention to groups of children who are at risk of being socially isolated or excluded from the mainstream system."

Grossman (2004) argued that inclusion is increasingly considered a leading challenge for all school leaders, regardless of whether they are engaged in mainstream or special education. Others, such as Leithwood et al. (1999), believe that with the increasing diversity in admissions driven by new societal demands for knowledge, schools need to develop new forms of knowledge management suitable for working in increasing uncertainty and varying educational needs. This diversity of children requires different forms of communication among them and with them.

Inclusive education is present when all students, regardless of the challenges they may face, are in age-appropriate mainstream classes in their local schools, to receive quality instruction, interventions, and support that allows them to achieve success in the core curriculum (Bui, Quirk, Almazan, & Valenti, 2018). The school and classroom operate on the principle that students with disabilities are just as competent as students without disabilities. Therefore, all students could be full participants in their classrooms and in the local school community. Much of the movement for inclusive education around the world is linked to legislation that requires students to be educated in the least restrictive environment. This means that they are with their peers without disabilities to the greatest extent possible, with general education as the first choice for all students (Alquraini & Gut, 2012). Apply Universal Design for Learning.

Intercultural communication is defined as communication between people from different cultures (Gudykunst & Kim 2003). It is important to promote mutual understanding and respect among people from various cultural backgrounds.

In the educational context, intercultural communication plays an important role in supporting cultural diversity and achieving social harmony (Banks 2004). Strategies for promoting intercultural communication include culturally sensitive training (Gay, 2002) and intercultural education (Bennett, 1993).

This article aims to build on these two concepts to explore strategies for inclusive education and intercultural communication in primary schools. Specifically, it analyzes how teachers understand and apply these concepts in practice, as well as the difficulties and opportunities they encounter along the way.

METHOD

Model of the Research

This study employed a mixed-methods research design that integrates both qualitative and quantitative approaches. This model was selected to provide a comprehensive understanding of how novice teachers implement and perceive practices related to inclusive and intercultural communications. The combination of these methodologies allows for a richer and more nuanced analysis, facilitating the exploration of measurable trends and in-depth contextual insights.

Population and Sample of the Research

The study participants consisted of 75 novice teachers from three cities in Bulgaria: Sofia, Stara Zagora, and Pazardzhik. The participants were selected using a random sampling method to ensure diverse representations across different geographical regions. The sample included a balanced distribution of teachers in terms of gender, age, and teaching experience, with the aim of enhancing the validity and generalizability of the findings. The sample was composed of 55 female teachers (73.33%) and 20 male teachers (26.67%), with age groups ranging from under 30 to over 50 years.

Data Collection Tools

Data were collected through an electronic survey that included both closed- and open-ended questions. The survey was designed to capture participants' demographic information, their understanding of inclusive education and intercultural communication, the strategies they employed, and the challenges they faced. The data collection instrument was developed by educational researchers with expertise in inclusive and intercultural communications. The validity of the survey was established through a pilot study and its reliability was confirmed with a Cronbach's alpha score of 0.85, indicating high internal consistency.

Data Analysis

The data collected from the survey were analyzed using a combination of quantitative and qualitative techniques. Quantitative data, such as demographic information and responses to closed questions, were analyzed using descriptive statistics to identify patterns and trends among the participants. Statistical analyses, including frequency distributions and cross-tabulations, were used to interpret data. Qualitative data derived from the open-ended survey questions were analyzed using thematic analysis. This method involved coding the data to identify recurring themes and patterns that were then grouped into broader categories. The qualitative analysis provided deeper insights into participants' experiences and perceptions regarding the implementation of inclusive education and intercultural communication strategies.

Ethical Considerations

All participants were fully informed of the objectives and procedures of the study and provided their consent to participate. The study ensured anonymity and confidentiality of all participants, with data stored and processed in compliance with personal data protection laws. Ethical approval for this study was obtained from the relevant institutional review board.

Limitations of the Research

Although this study offers valuable insights, it is subject to certain limitations. Although adequate, the sample size was limited to novice teachers in specific regions of Bulgaria, which may affect the generalizability of the findings. Additionally, the research design relied on self-reported data, which may have introduced a bias. Future research could expand the scope to include other stakeholders such as students and parents, and explore the implementation of inclusive education and intercultural communication in different educational contexts.

Presentation of Results and Explanation of Analysis

Before presenting the results in tables and figures, it is essential to provide a detailed explanation of the analysis techniques used and the specific results that will be highlighted. This approach not only clarifies the methodology but also ensures that the interpretation of data is coherent and meaningful.

Explanation of Analysis Techniques

Data collected through the survey were subjected to both quantitative and qualitative analyses. Quantitative data, including demographic variables and responses to closed-ended questions, were analyzed using descriptive statistics. This involved calculating frequencies, percentages, and means to identify patterns and trends among the participants. These statistical measures help provide a clear picture of the distribution and commonalities within the sample, which are critical for understanding the broader implications of the study.

Qualitative data collected through open-ended questions were analyzed using thematic analysis. This method involved systematically coding responses to identify recurring themes and categories. Thematic analysis allows for a deep exploration of participants' experiences and perceptions, offering insights into the contextual factors that influence the implementation of inclusive education and intercultural communication strategies.

Presentation of Results

The results of the analysis are presented in the following tables and figures: Each table and figure is accompanied by a brief description explaining what is being represented and how the data contribute to the overall findings of the study.

Table 1 provides a summary of the demographic characteristics of the study participants, including their gender, age, and teaching experience. This information is crucial for understanding the context in which this study's findings are situated.

Table 1. Demographic characteristics of the participants.

Demographic Variable	N	Percentage (%)
Gender		
Female	55	73.33
Male	20	26.67
Age		
Under 30 years	10	13.33
30-50 years	40	53.33
Over 50 years	25	33.33
Teaching Experience		
Under 5 years	15	20
5-15 years	30	40
Over 15 years	30	40

Table 1 is formatted according to APA guidelines, with three horizontal lines separating the header, the main body, and the footer of the Table 1. This layout provides a clear and professional presentation of the data.

Figure 1 illustrates the various strategies employed by the participants in their inclusive education practices. The percentage of instructors using various tactics, such as cooperative learning, differentiated teaching, and universal design for learning, is shown in a bar chart style based on the data.

This figure is critical for understanding which inclusive education strategies are most commonly used among the participants. It highlights the prevalence of cooperative learning and the adoption of differentiated instruction as key approaches to inclusion.

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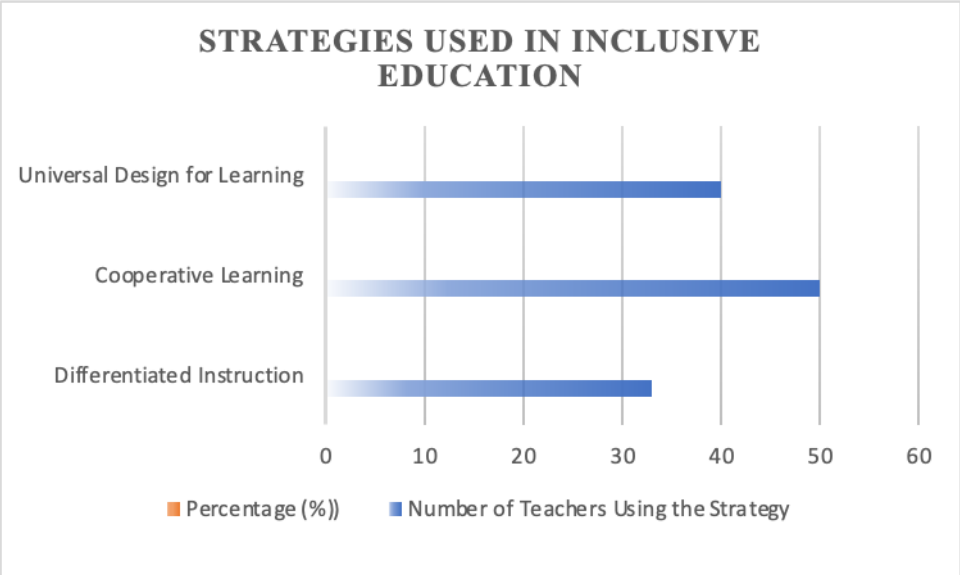

Figure 1. Strategies used in inclusive education.

According to the collected data, the differentiated instruction strategy is employed by about one-third of the teachers (33% or n=25) who integrate it into their daily instructional practice. Differentiated instruction is characterized by adapting the learning process to the varying needs of the students, with such adaptability being an essential feature of inclusive education.

The cooperative learning strategy is also widely employed, with about two-thirds of the study participants (66.67% or n=50) incorporating it into their pedagogical practices. This strategy focuses on group work and promoting cooperation among students, which aids in integrating all students into the learning process.

Ultimately, the universal design for learning strategy is applied by approximately half of the participants (53.33% or n=40). This strategy emphasizes the importance of designing the learning process and environment to be accessible and appropriate for all students.

These results demonstrate that teachers implement a variety of inclusive education strategies, but they also highlight the significance of cooperative learning as the most widely utilized pedagogical practice among primary school teachers in Bulgaria.

Figure 2 depicts the strategies used by participants to promote intercultural communication in their classrooms. Similar to Figure 1, this data is presented in a bar chart format, which clearly shows the distribution of strategies such as culturally sensitive teaching and intercultural education.

The figure aids in identifying the most often used tactics for promoting cross-cultural communication, emphasizing the value of culturally aware instruction in particular..
According to the data analysis, the most frequently encountered strategy is "culturally sensitive teaching", which is applied by 60% of the teachers (n=45). This strategy focuses on understanding and acknowledging the diverse cultural contexts of students, aiming to provide education that responds to their unique needs and perspectives.

The "intercultural education" strategy is also widely applied, involving around half of the study participants (46.67% or n=35). Intercultural education aims to develop students' skills to communicate and interact effectively and respectfully with people from different cultural backgrounds.

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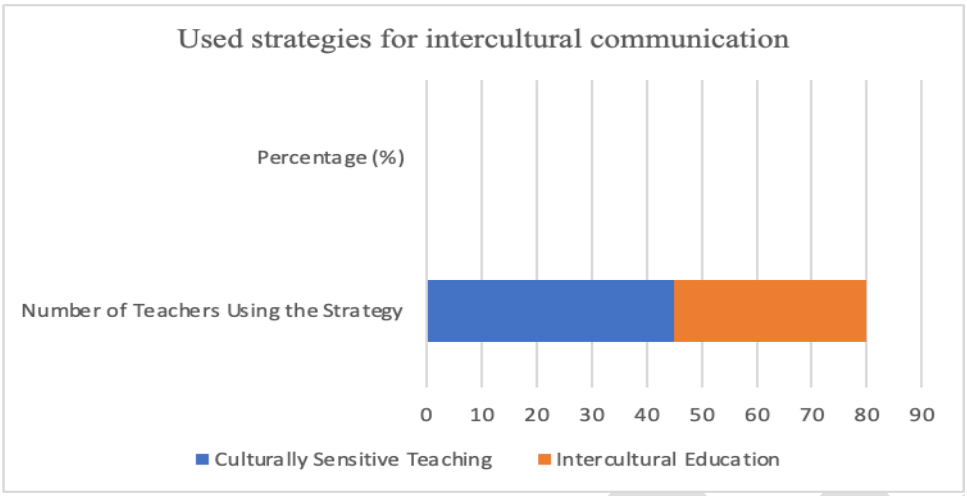

Figure 2. Used strategies for intercultural communication.

These findings demonstrate that educators use a variety of approaches to facilitate cross-cultural communication, with "culturally sensitive teaching" being the most often used approach. However, a significant proportion of teachers also apply "intercultural education", which emphasizes the importance of competencies for effective interaction in diverse cultural contexts.

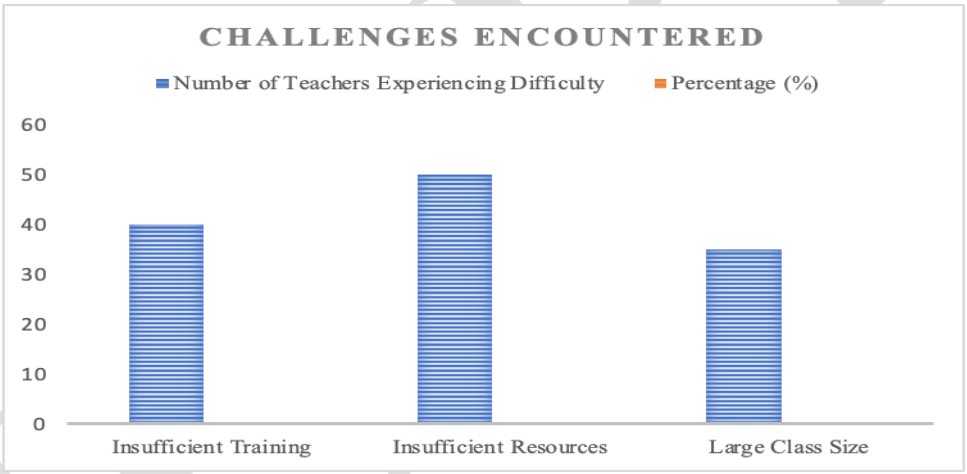

Figure 3. Challenges encountered by teachers in implementing inclusive education and intercultural communication strategies.

Figure 3 provides a visual representation of the challenges that teachers face when implementing strategies for inclusive education and intercultural communication. The data reveal that the most significant barrier is the lack of sufficient resources, which encompasses a broad range of needs, including physical materials, specialist support, and institutional assistance. This challenge is reported by 66.67% of the participants (n=50), highlighting the critical need for enhanced resources to support effective implementation.

This finding underscores the importance of addressing resource-related issues to ensure that teachers are adequately equipped to deliver inclusive and culturally responsive education. The figure clearly illustrates the urgency of improving resource allocation as a fundamental step toward overcoming the obstacles that hinder the successful integration of these strategies in primary school settings.

The next most common difficulty is insufficient training. Nearly half of the teachers (53.33% or n=40) have encountered this hurdle. This may suggest that a significant number of teachers do not feel adequately prepared or trained in this area, highlighting the need for more education and preparation.

The third most common difficulty is managing large classes, encountered by approximately 46.67% (n=35) of teachers. This emphasizes the difficulties associated with working with large groups of students, particularly in the context of inclusive education and intercultural communication.

These results highlight the significant challenges that need to be overcome to optimize the implementation of inclusive education and intercultural communication strategies in primary school.

DISCUSSION, CONCLUSION, and SUGGESTIONS

The study's conclusions provide a thorough grasp of the difficulties and solutions pertaining to inclusive education and cross-cultural dialogue in elementary schools.. Through the analysis of the collected data, it is evident that while teachers actively employ various strategies to foster an inclusive environment, they encounter significant obstacles, particularly those related to insufficient resources, inadequate training, and managing large class sizes.

Addressing Resource Constraints

One of the most pressing challenges identified in this study is the lack of adequate resources, which aligns with findings from other research in the field. For instance, Florian and Black-Hawkins (2011) emphasized that resource availability is a critical factor in the successful implementation of inclusive practices. The need for culturally sensitive educational materials, specialist support, and institutional assistance is paramount. This study suggests that improving learning resources and materials through the development of diverse culturally relevant content can significantly enhance the inclusivity of the educational environment. The role of resource teachers in supporting novice teachers is crucial, as they can offer tailored resources and strategies that address the specific needs of students, thereby bridging the gap in resources (Avramidis & Norwich, 2010).

Enhancing Professional Development

Another major challenge is the inadequate training of teachers in inclusive education and intercultural communication. This finding is consistent with previous research, such as that of Sharma, Forlin, and Loreman (2017), who highlighted the importance of ongoing professional development in equipping teachers with the skills needed to effectively manage diverse classrooms. The literature, which argues that ongoing professional development is necessary for teachers to stay current with the newest inclusive practices and pedagogical approaches, supports the suggested strategy to improve teachers' professional skills through regular training and seminars (European Agency for Special Needs and Inclusive Education 2022). Collaboration between novice and resource teachers in professional development activities can lead to more effective implementation of inclusive strategies and a deeper understanding of intercultural dynamics in the classroom.

Managing Large Class Sizes

The challenge of managing large classes is another significant barrier to effective inclusive education, as noted by Blatchford, Russell, and Webster (2012). Large class sizes can dilute the attention each student receives and make it difficult to implement individualized instruction or small-group work, which are critical components of inclusive education. The proposed strategy of resizing classroom structures by employing alternative approaches, such as small group work or individualized instruction, is consistent with recommendations in the literature. Research indicates that reducing class sizes or reorganizing them into smaller groups can improve student engagement and learning outcomes, especially for students with special needs (Mitchell, 2014). Resource teachers can play a pivotal role in this process by assisting in the organisation and management of classroom structures that facilitate inclusive education.

Although the proposed strategies offer practical solutions to the identified challenges, it is important to recognise the limitations of this study. The strategies developed were based on data from a specific context, and their applicability may vary in different educational settings. Moreover, the implementation of these strategies requires substantial resources, including time, finances, and training, which may not be readily available in all schools.

Future research should focus on evaluating the effectiveness of these strategies in various contexts to determine their generalizability. Additionally, it would be beneficial to explore how teachers perceive these strategies and how they impact students' academic achievement and social integration. Research could also investigate the influence of external factors, such as family background, political climate, and socioeconomic conditions, on the success of inclusive education and intercultural communication practices. This study sheds light on critical challenges and strategies associated with inclusive education and intercultural communication in primary schools. The data indicate that while teachers employ diverse strategies, they face significant obstacles that hinder the full realisation of inclusive education. Schools may build more inclusive and equitable learning environments by tackling these issues with focused techniques include regulating classroom structures, expanding professional development, and upgrading resources.. However, further research is needed to explore the broader applicability of these strategies and to develop a deeper understanding of the factors that influence their success. Despite these challenges, educators' commitment to fostering inclusive classrooms is evident, and with the right support, significant progress can be made in this important area.

Ethics and Conflict of Interest

All ethical rules were observed at each stage of the research. The author declares that he acted in accordance with ethical rules in all processes of the research.

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EXAMINING NUMBER SENSE SKILLS OF KINDERGARTEN CHILDREN

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Abstract

The aim of this study is to determine the number sense skills of preschool (Kindergarten) children. In the study, survey design, one of the quantitative research methods, was used. The study group consists of a total of 114 children attending all the kindergartens (5 kindergartens) in the city center of Tunceli in the 2020-2021 school year. The data collection tool used in the study is the "Preschool Number Sense Test" developed by the researchers. In the analysis of the data, the correct answers obtained by using number sense skills, the correct answers obtained by using rule and operation-based methods, the false answers obtained by using number sense skills, the false answers obtained by using rule-operation-based methods and the questions left unanswered were considered. As a result of the analysis made, it was determined that preschool students used rule- and operation-based methods more in problem-solving when dealing with questions, and it was seen that they used number-sense-based methods less frequently.

Keywords: Number sense, number sense test, kindergarten children.

INTRODUCTION

The concept of number sense is a topic that has recently started to be studied in our country. There are many different definitions of this concept in the related literature, and it is addressed in different dimensions. While Berch (2005) defines number sense as “the sense of the meanings of numbers”, McIntosh, Reys, and Reys (1992) and Reys, Reys, McIntosh, Emanuelsson, Johansson, and Yang (1999) describe number sense as number and operations, comprehension, reasoning when using numbers, using numbers flexibly and developing strategies. According to Howden (1989), it is the process of constructing logical estimates by identifying the many applications for numbers, their significance in activities, the best method for computation, patterns among numbers, and the development of an intuitive framework around numbers.. Therefore, rather than merely knowing a number, the sense of a number may be defined as the capacity to understand all the interactions associated with it, such as few-many, part-whole, the link between the number and the real quantity, and the outcomes of the measurement (Olkun & Toluk Uçar, 2018). Although many definitions are made, the short definition of the concept of number sense in Siegler's study (1991) is also developmentally appropriate for kindergarten mathematics: Number sense includes identifying numbers, performing counting activities, arranging numbers in order, and making decisions about sizes (As cited in McGuire, Kinzie, & Berch, 2012). A person with a sense of number can use numbers flexibly to make numerical expressions more meaningful and understandable, can switch between different representations of given numbers and can also relate numbers, operations and symbols to each other (Markovits & Sowder, 1994).

The importance of this idea in mathematics instruction is demonstrated by the fact that students who possess a sense of number are better able to handle mathematical issues with ease and flexibility

(NCTM, 2000). With the concept of number sense gaining importance in mathematics education, skills such as how to perform mental operations, how to examine mathematical patterns, how to predict the outcome of a problem and how to talk about emerging relationships are tried to be taught to students. (Anghileri, 2006). Therefore, by providing students with flexible thinking skills, students are enabled to produce different solutions without depending on mathematical rules and paper and pencil.

In children, mathematical concept development is experienced in early childhood. However, basic mathematical skills are also acquired in early childhood. Therefore, this period is of great importance for children. Mathematics learning begins with the acquisition of some of the basic concepts by children. In the standards of the National Council of Teachers of Mathematics (NCTM) (2000), it is emphasized that preschool children should become more skilled in recognizing the patterns in their environment and, through their experiences at school, in recognizing patterns in the arrangement of objects, shapes and numbers, and in using patterns to predict the next step in an arrangement (As cited in Smith, 2001). Again, among the basic concepts stated by NCTM (2006) (As cited in the National Association for the Education of Young Children (NAEYC), 2008) as associated with the sense of number, numbers and operations (ordering, combining, comparing, separating), algebraic thinking, patterning, and ordering objects with their measurable properties are considered important. Even though many mathematicians and scientists still disagree about the optimal age to start teaching these concepts (Mix, Huttenlocher & Levine, 2002), it is generally accepted that children learn a great deal about mathematics up until the ages of three and four, at which point they develop a great deal of mathematical knowledge (Baroody, Lai and Mix, 2006; Ginsburg, Cannon, Eisenband and Pappas, 2006; Saracho and Spodek, 2008).

Development of Number Concept and Number Sense in Preschool Children

According to Spelke and Kinzler (2007), infants grasp the notion of "more" eight months after birth, and Charlesworth and Lind (2010) states that children grasp the concept of "one-to-one matching" by the end of the first 24 months. The development of the number concept in children takes place much later than the concept of 'more'. Children start using numbers by the end of the first 24 months. However, at this stage, children are not aware of the meaning of the numbers, and they only imitate what is being said.

By the age of 3, children begin to acquire mathematical skills that can be considered important through games and other activities. Children at this age can classify objects, group them according to color and shape, and solve the problems they face in daily life (NAEYC, 2008). During this period, children can count small numbers sequentially. However, the numerical meaning of numbers is not understood by children in this period. Children's counting at this age is analogous to speaking the letters. According to Charlesworth and Lind (2010), number perception does not develop as a result.

Four-year-olds can say the next number while counting numbers. In this period, it is seen that children still make counting errors. Nonetheless, around this time, children are able to respond to the query "How many?" using their fingers (NAEYC, 2008). Although children can write and say numbers in this period, they are not aware of the quantitative meaning of the numbers (Seo & Ginsburg, 2004). Youngsters between the ages of four and five are aware that counting entails adding one number to the previous one. Children do, however, comprehend that the number they pronounce includes the numbers that come before that number while they are counting (Clements & Sarama, 2006).Five-year-olds can understand the concept of sequentiality. During this period, children can categorize triangles, circles, squares by size. Basic geometric shapes such as triangle, circle and square can be distinguished by children in this period. In addition, the variational and symmetrical differences and similarities regarding these geometric shapes can also be understood by children (Clements & Sarama, 2006). Towards the end of the age of 5, children begin to measure length and area using non-standard units. For example, a child at this age can tell how many steps (up to 5-10 steps) he/she needs to take to reach his/her teacher's desk (Spelke & Kinzler, 2007).

Most 6-year-olds develop the concept of one-to-one matching. However, the concept of quantity is also beginning to be understood in this period. Most children at this age understand how to count and that numbers increase one by one while counting. Although many 6-year-old children develop counting skills starting from their first year, along with combining and separating skills, the ability to count by adding does not reach the same level in 6-year-olds (Smith, 2009).

The intuitive behaviors of children in the preschool period form the basis of mathematical thinking. It is possible to view children's interactions with different things as their initial encounters with perception (Erdoğan & Baran, 2003).. Children with a developed sense of number can compare groups to discover the difference between groups of objects. They can increase or decrease the number of objects in the group, merge or separate groups. In addition, they realize that numbers can represent concrete elements (McIntosh, Reys, & Reys, 1992).

Number sense first develops in infancy through verbal notifications (Dehaene, 2011). Along with the information taught in schools about numbers and quantities, the development of the sense of number is also supported by the informal knowledge that children learn through their experiences in daily life (Tsao, 2004). Children's first experiences with numbers are usually formed by the acquisitions they have achieved through their interactions with objects (Guven, 2009). Piaget states that the concept of number is a matter of logic, and that children cannot learn to count logically without gaining the concept of number and developing logical thinking skills (Sarıca, 2007).

Children have a rudimentary and hidden intuition as early as age one or two, such as identifying and favoring the more. Children are taught to count by their families using their fingers, toys, other little items, and individuals seated at the table. Children ask questions like "Which is more?" and "Is there enough?" on a regular basis (Van de Walle, Karp, Bay Williams, & Wray, 2013). Although by age 3 they cannot count reliably and cannot use number words to express the number of objects in a group, they can consciously arrange objects, understand the interaction between them, and distinguish groups of two or three objects. A 3- or 4-year-old child can compare two small numbers and specify the larger or smaller number when required (Gersten & Chard, 1999). A 4-year-old child can count in the first six months in an orderly sequence, pointing out objects even though the numbers are not consistent. In the second six months, he/she can recite the numbers by heart and correctly indicate the counted objects. Children at this age use collections of objects when comparing numbers (Anghileri, 2006). At the age of 5, the child can compare numbers mentally, express the mental representation of numbers and visuals, count correctly starting from 1, and know that the last number he/she says while counting a group of objects indicates the total number of objects in the group (Gersten & Chard, 1999).

The Concept of Number and Sense of Number in Preschool Education

The early childhood years, between the ages of 0 and 8, are perhaps the most important developmental years in a person's life. In recent years, the importance of this development has been recognized and adopted by teachers, parents and researchers, especially in the field of mathematics. There is a lot of interest and time devoted to teaching numbers in mathematics teaching in early childhood as well as in the first years of primary school. Relevant objectives in the programs also seem to support the conceptual development of children's sense of number. The reason for this is the recognition of number sense as a concept to be developed in early childhood. The most important reasons for targeting the development of number sense in mathematics in early childhood are that it is a prerequisite for teaching other subjects of mathematics, and it has an important place in teaching the concept of digits and operations (combining, separating, piecemeal whole, comparison, peer groups). Insufficient number sense development in early childhood can harm a person's long-term math skills. Interventions in early childhood will prevent the difficulties that will be encountered in later years (McGuire, Kinzie & Berch, 2012). Acquisitions for the concept of number developed in the preschool years are related to the number sense skills as well as the concept of number.

In the current study, the objectives related to mathematics in the Preschool Education Program were examined and the number sense components introduced to the literature by McIntosh, Reys, & Reys,

(1992) and Reys, Reys, McIntosh, Emanuelsson, Johansson, & Yang, (1999) were examined. In this connection, the following components were addressed:

(1) Knowledge and Skills about Numbers; sense of regular existence of numbers, multiple representations of numbers, sense of relative and absolute magnitudes of numbers, one-to-one correspondence principle, regular counting or literal order, one-to-one matching, understanding cardinal value.

(2) Flexible Calculation and Counting Strategies; the ability to count and perform mathematical operations practically. To be able to use fast and practical counting methods by grouping instead of counting one by one or to use fast and practical ways while performing mathematical operations (addition, subtraction, multiplication and division).

3) Understanding the Meaning and Magnitude of Numbers; distinguishing quantities, comparing numerical magnitudes, ordering numbers, distinguishing relationships, developing conceptual understanding of numbers, and reasoning over numbers.

In counting activities, one-to-one matching should be used when comparing two multiplicities. One-to-one matching is the matching of sets of different objects (pens, children, etc.) according to their quantity (Mastropieri & Scruggs, 2016). In minority-to-many comparisons, attention is drawn to the difference between one-to-one matching, "How many more?", "How many missing?". Questions such as "Is it the same?" should be asked and questioned. This situation completes the preparation of the concepts of addition and subtraction, while developing minority-many relations and large-small relations (Tertemiz, 2017).

It is important to create rich learning environments to develop the mathematical competence that occurs through the naturally developing experiences in children so that advanced mathematical skills can be acquired later. In addition, identifying children who are inadequate in terms of mathematics skills and taking necessary precautions will help to eliminate their mathematics deficiencies (Güleç & İvrendi, 2017). Thus, it can be said that the application of various support educations for the development of mathematics skills for children in the preschool period will positively affect not only the school success of the child, but also his/her whole life.

Purpose of the Study

The importance of number sense is frequently emphasized in the literature, and there are studies showing that students' success in mathematics is significantly related to their number sense skills (Çekirdekçi, 2015; Harç, 2010; Mohamed & Johnny, 2010; Yang, Li, & Lin, 2008). However, studies show that students' level of use of number sense is low, and students adhere to rule-based strategies and written processing algorithms rather than using strategies based on number sense (Reys, Reys, McIntosh, Emanuelsson, Johansson, & Yang, 1999; Yang, Li, & Lin, 2008).

Number sense is one of the newly studied subjects in our country, and it is seen that the number of related studies is limited and in addition, most of the studies conducted both in Turkey and abroad have been conducted with students at secondary school level. In the studies mentioned, students' number sense levels and performances (Cheung & Yang, 2018; Cheung & Yang, 2020; Lemonidis & Kaiafa, 2014; Li & Yang, 2010; Öztürk, Durmaz & Can, 2019; Ulusoy, 2020; Yang, 2019; Yang & Li, 2016; Yang, Li & Li, 2008; Yang & Lin, 2015; Yang & Sianturi, 2020), the relationship between number sense and math achievement (Alsawaie, 2012; Bayram & Duatepe Paksu, 2014; Tümer, 2018; Günkaya, 2018; Kyaw & Thein, 2018; Marga, Kusmayadi & Fitriana, 2020), the effects of number sense-based teaching on students' self-efficacy and performance in mathematics (Sevgi & Alpaslan, 2020; Yarar, Es & Gürefe, 2018) and number sense components and their relationship with gender and grade level (Akkaya, 2015; Günkaya, 2018; Singh, Rahman, Ramly, & Hoon, 2019; Yapıcı, 2013; Yenilmez & Yıldız, 2018) have been investigated.

The fact that there is a very limited number of studies on number sense in Turkey and abroad, especially at the preschool level (Aunio, Niemivirta, Hautamaki, Luit, Shi, & Zhang, 2006; Kilimlioğlu, 2018; Pittalis, Pitta-Pantazi, & Christou, 2018) can be seen as a gap in the literature. Seen from this perspective, there is a need for research on the determination of number sense skills of preschool students.

In this regard, the purpose of the current study is to examine the number sense skills of children attending kindergarten. To this end, answers to the following problems and sub-problems are sought.

Problem: "How are the number sense skills of kindergarten children?
Sub Problems
1. What are children's knowledge and skills about numbers?
2. What are their knowledge and skills about flexible calculation and counting strategies?
3. What are their knowledge and skills of understanding the meaning and magnitude of numbers?

METHOD

Research Model

In the current study, it was aimed to determine the number sense skills of preschool students. Thus, survey design, one of the quantitative research methods, was used in the studyThe survey design not only offers the information, abilities, and attitudes of the participants regarding a subject or event being examined, but it also necessitates working with bigger groups than other designs (Fraenkel & Wallen, 2006). In other words, the survey design refers to the collection of data from a large group to reveal the characteristics of the group (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2014).

Study Group

This study was carried out in all the kindergartens (5 kindergartens) in the city center of Tunceli. It was planned to include all the students in these kindergartens, but at the time of the study, some of the students could not attend their schools due to the Covid-19 Pandemic, and all the continuing students were tried to be reached. The study was carried out in the 2020-2021 school year and a total of 114 preschool students were included in the study. The participating students were 5-6 years old.

Data Collection Tool

Preschool Number Sense Test: In this study, the "Preschool Number Sense Test" developed by the researchers was used. While developing the number sense test, the test development stages were considered and while the questions were being prepared, the number sense components that were introduced to the literature by McIntosh, Reys & Reys (1992) and Reys, Reys, McIntosh, Emanuelsson, Johansson & Yang (1999) were used. As a result of the analysis made, it was decided to remove 6 questions from the preschool number sense test, the final version of the test consisted of 15 questions. The KR-20 reliability coefficient of the test was found to be 0.858, the mean of the item difficulty index was found to be 0.68, and the mean of the item discrimination index was found to be 0.63.

Data Collection

The number sense test, which was prepared for preschool children, was started to be applied in the designated schools after the necessary permissions were obtained from the Tunceli Provincial Directorate of National Education and the Tunceli Governorship. Before starting the applications in schools, the necessary permissions were given to the school administrators and brief information was given about the purpose of the study and the applications to be made. The number sense test was administered to the students by the researcher under the supervision of the teachers. During the administration, approximately 5 minutes were given for each question, and the administration was completed in 2 class hours. During the study with pre-school students, the questions were read to the students by the teachers, since the students could not read and write, and the answers were written to the number sense test simultaneously by the teachers.

Analysis of Data

While examining the answers given by the students to the number sense test, it was checked whether the questions were answered correctly or not, and then, the explanations made by the students in the

explanation sections below the questions were examined. In line with the answers given to the questions and the explanations made, the solution strategies of the students were tried to be determined and coding was made in this direction. The coding table given below was used while coding.

Table 1. Number sense test coding table.

Answer Type	Strategy Type	Coding No.
True	Solution with Number Sense	4
	Rule-Based Solution	3
False	Solution with Number Sense	2
	Rule-Based Solution	1
Questions Left Unanswered		0

According to Table 1, in the solutions of the items in the number sense tests, the correct answer obtained by using number sense skills was coded as 4, and the correct answer obtained by using rule- and operation-based methods was coded as 3. If the answer obtained by using number sense skills was false, it was coded as 2 and if the answer obtained by using rule- and operation-based solutions was false, it was coded as 1. And if the question was left unanswered, it was coded as 0.

RESULTS

In the study, it was attempted to answer the question "How are the number sense skills of the children attending the kindergarten?" The numbers and percentages of the students using number sense-based solutions and rule-based solutions are presented in tables. In addition, the findings are presented in line with the components covered in the study (knowledge and skills about numbers, flexible calculation and counting strategies, understanding the meaning and magnitute of numbers).

Findings Regarding the Component of Knowledge and Skills about Numbers

The findings regarding the component of knowledge and skills about numbers of the children attending the kindergarten are given in two different tables, Table 2 and Table 3, as the number of items in this component is high.

Table 2. Preschool students' knowledge and skills about numbers.

	Questions							
	Q 1		Q 2		Q 3		Q 4	
Strategy Types	N	%	N	%	N	%	N	%
Number Sense Based Solution - Correct Answer	11	9.6	15	13.2	14	12.3	14	12.3
Number Sense Based Solution - False Answer	0	.0	0	.0	0	.0	0	.0
Rule-Based Solution - Correct Answer	52	45.6	53	46.5	51	44.7	59	51.8
Rule-Based Solution - False Answer	51	44.7	42	36.8	44	38.6	29	25.4
Unanswered	0	.0	4	3.5	5	4.4	12	10.5
Total	114	100	114	100	114	100	114	100

As seen in Table 2, the preschool students' knowledge and skills about numbers can be explained as follows:

While 11 (9.6%) of the students who answered the first question correctly gave answers based on number sense, 52 (45.6%) gave a rule-based answer. While 51 students (44.7%) who gave false answers used a rule-based solution, no students who left the question unanswered were identified. Fifteen

(13.2%) of the students who answered the second question correctly gave answers based on number sense, while 53 (46.5%) gave a rule-based answer. Forty-two students (36.8%) who gave false answers used a rule-based solution, while 4 students (3.5%) left the question unanswered. While 14 (12.3%) of the students who answered the third question correctly gave answers based on number sense, 51 (44.7%) gave a rule-based answer. While 44 students (38.6%) who gave false answers used a rule-based solution, 5 students (4.4%) left the question unanswered. While 14 (12.3%) of the students who answered the fourth question correctly gave answers based on number sense, 59 (51.8%) gave a rule-based answer. While 29 students (25.4%) who gave false answers used a rule-based solution and gave false answers, 12 students (10.5%) left the question unanswered.

Two different student answers to questions 1 and 2 in this component are given below as examples.

Number Sense Based Solution Example Rule Based Solution Example

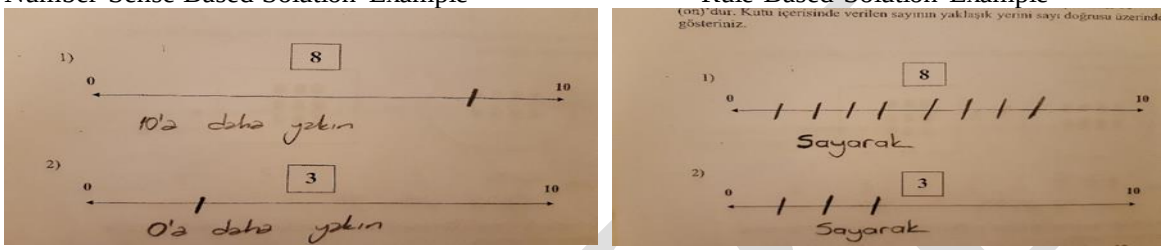

Figure 1. Sample student answers-preschool number sense test question 1 and 2.

Table 3. Preschool students' knowledge and skills about numbers.

	Questions							
	Q12		Q13		Q14		Q15	
Strategy Types	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Number Sense Based Solution - Correct Answer	8	7.1	14	12.3	11	9.6	14	12.3
Number Sense Based Solution - False Answer	0	.0	0	.0	0	.0	0	.0
Rule-Based Solution - Correct Answer	58	50.8	53	46.5	54	47.4	59	51.8
Rule-Based Solution - False Answer	42	36.8	37	32.5	41	35.9	35	30.7
Unanswered	6	5.3	10	8.8	8	7.1	6	5.3
Total	114	100	114	100	114	100	114	100

While 8 (7.1%) of the students who answered the twelfth question correctly gave answers based on number sense, 58 (50.8%) gave a rule-based answer. While 42 students (36.8%) who gave false answers used a rule-based solution, 6 students (5.3%) left the question unanswered. Of the students who answered the thirteenth question correctly, 14 (12.3%) answered based on number sense, while 53 (46.5%) gave a rule-based answer. While 37 students (32.5%) who gave false answers used a rule-based solution, 10 students (8.8%) left the question unanswered. While 11 (9.6%) of the students who answered the fourteenth question correctly gave answers based on number sense, 54 (47.4%) gave a rule-based answer. While 41 students (35.9%) who gave false answers used a rule-based solution, 8 students (7.1%) left the question unanswered. While 14 (12.3%) of the students who answered the

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fifteenth question correctly gave answers based on number sense, 59 (51.8%) gave a rule-based answer. While 35 students (30.7%) who gave false answers used a rule-based solution, 6 students (5.3%) left the question unanswered. In line with the obtained data, it was determined that preschool students use more rule- and operation-based solutions in solving the questions in this number sense component.

Findings Regarding the Component of Flexible Calculation and Counting Strategies

Findings for the component of flexible calculation and counting strategies are presented in Table 4.

Table 4. Preschool students' skills for the component of flexible calculation and counting strategies.

	Questions					
	Q 5		Q 6		Q 7	
Strategy Types	**N**	**%**	**N**	**%**	**N**	**%**
Number Sense Based Solution - Correct Answer	14	12.3	15	13.2	10	8.8
Number Sense Based Solution - False Answer	0	.0	0	.0	0	.0
Rule-Based Solution - Correct Answer	86	75.4	83	72.8	82	71.9
Rule-Based Solution - False Answer	11	9.6	9	7.9	14	12.3
Unanswered	3	2.6	7	6.1	8	7.1
Total	114	100	114	100	148	100

According to the data in Table 4, the preschool students' performance regarding the questions in the component of flexible calculation and counting strategies can be explained as follows:

While 14 (12.3%) of the students who answered the fifth question correctly answered based on number sense, 86 (75.4%) gave a rule-based answer. While 11 students (9.6%) who gave false answers used a rule-based solution, 3 students (2.6%) left the question unanswered. Fifteen (13.2%) of the students who answered the sixth question correctly gave answers based on number sense, while 83 (72.8%) gave a rule-based answer. While 9 students (7.9%) who gave false answers used a rule-based solution, 7 students (6.1%) left the question unanswered. While 10 (8.8%) of the students who answered the seventh question correctly gave answers based on number sense, 82 (71.9%) gave a rule-based answer. While 14 students (12.3%) who gave false answers used a rule-based solution, 8 students (7.1%) left the question unanswered. In line with the obtained data, it was determined that preschool students use more rules and operation-based solutions in solving the questions in this number sense component.

Two different student answers to questions 5 and 6 in this component are given below as examples

Number Sense Based Solution Example Rule Based Solution Example

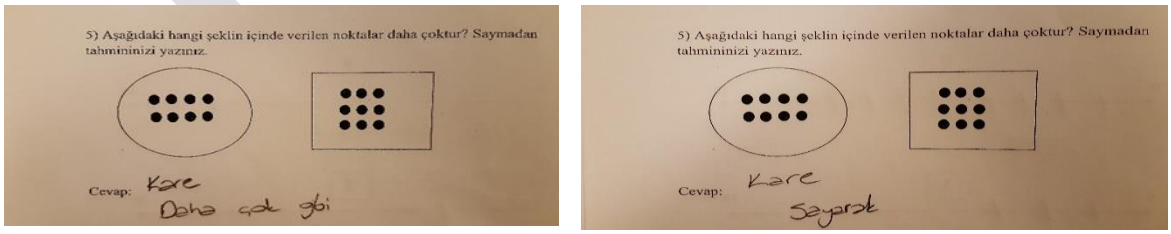

Figure 2. Sample student answers-preschool number sense test question-5.

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Number Sense Based Solution Example Rule Based Solution Example

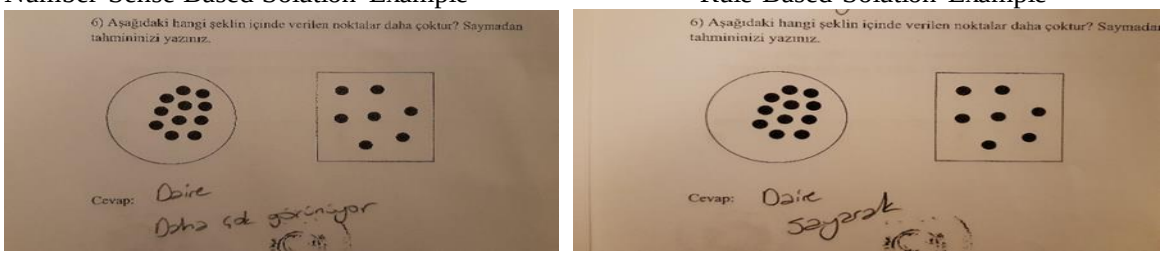

Figure 3. Sample student answers-preschool number sense test question-6.

Findings Regarding the Component of Understanding the Meaning and Magnitute of Numbers

The findings for the component of "Understanding the Meaning and Magnitute of Numbers" are given in Table 5.

Table 5. Preschool Students' Performance for the Component of Understanding the Meaning and Magnitute of Numbers

	Questions							
	Q 8		Q 9		Q 10		Q 11	
Strategy Types	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Number Sense Based Solution - Correct Answer	0	.0	0	.0	0	.0	0	.0
Number Sense Based Solution - False Answer	0	.0	0	.0	0	.0	0	.0
Rule-Based Solution - Correct Answer	75	65.8	73	64.1	78	68.4	83	72.8
Rule-Based Solution - False Answer	36	31.6	38	33.4	32	28.1	28	24.6
Unanswered	3	2.6	3	2.6	4	3.5	3	2.6
Total	114	100	114	100	114	100	114	100

According to the data in Table 5, preschool students' performance regarding the component of understanding the meaning and magnitute of numbers can be explained as follows:

While 75 students (65.8%) who answered the eighth question correctly gave a rule-based answer, 36 students (31.6%) who gave the false answer used a rule-based solution and gave the false answer. Three students (2.6%) left the question unanswered. No solution based on number sense was identified for this question. While 73 students (64.1%) who answered the ninth question correctly gave a rule-based answer, 38 students (33.4%) who gave the false answer used a rule-based solution and gave the false answer. Three students (2.6%) left the question unanswered. No solution based on number sense was identified for this question. While 78 students (68.4%) who answered the tenth question correctly gave a rule-based answer, 32 students (28.1%) who gave the false answer used a rule-based solution. Four students (3.5%) left the question unanswered. No solution based on number sense was identified for this question. While 83 students (72.8%) who answered the eleventh question correctly gave a rule-based answer, 28 students (24.6%) who gave the false answer used a rule-based solution. Three students (2.6%) left the question unanswered. No solution based on number sense was identified for this question.

Two different student answers to questions 8 and 10 in this component are given below as examples:

Rule Based Solution Example (Correct Answer)

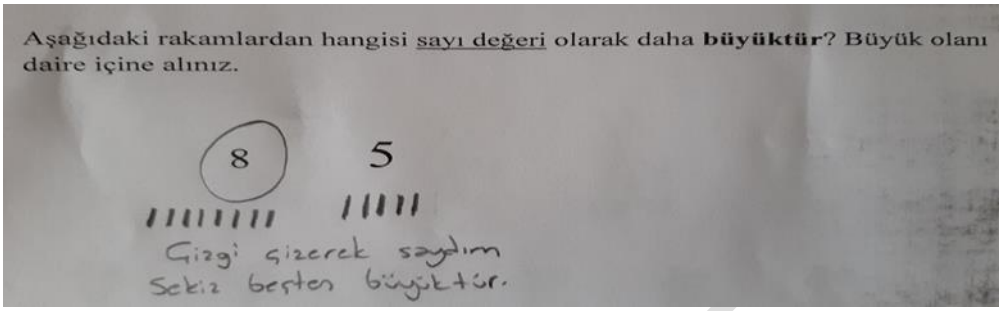

Figure 4. Sample student answer-preschool number sense test question-8.

Rule-Based Solution Example (False Answer)

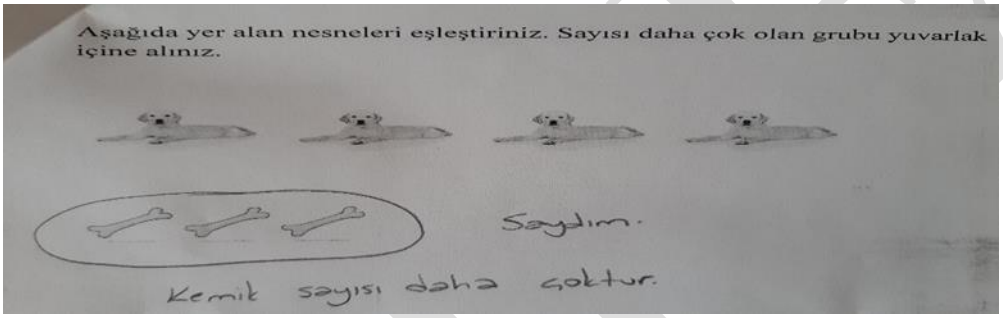

Figure 5. Sample student answer-preschool number sense test question-10.

As seen in figures 4 and 5 above, the student compared the given multiplicities by counting. He preferred to compare by counting instead of using estimation skill. Therefore, we can say that this student preferred rule-based solution instead of number sense.

DISCUSSION, CONCLUSION and SUGGESTIONS

The purpose of this study was to ascertain the preschoolers' level of number sense proficiency. The researcher created the preschool number sense exam with this goal in mind, and it was attempted to ascertain the pupils' current standing in this area. According to the results, preschoolers employ more rules and operation-based answers when completing the number sense component problems. It was observed that they used the number sense-based solution less frequently. The components in which the solution was made by using the number sense strategies most (about one fifth of the children) were determined to be the components of "Flexible calculation and counting strategies" and "Knowledge and skills about numbers". The component in which the solution was obtained by using the rule-based solutions the most (almost all) was determined to be the component "Understanding the meaning and magnitude of numbers", and no solution based on number sense could be determined in the questions in this component. In other words, it was determined that preschool students use rule- and operation-based solutions more in problem-solving questions, and they use number-sense-based solutions less frequently.

Examining research on number sense reveals that pupils do poorly in number sense and rely more on rule- and operation-based strategies; these findings are consistent with the current study's findings at the primary school level (Çekirdekçi, 2015; Cheung & Yang, 2018; Lemonidis & Kaiafa, 2014; Yang, 2019; Yang, Li and Li, 2008) and secondary school level (Akkaya, 2015; Alsawaie, 2012; Bayram & Duatepe Paksu, 2014; Tümer, 2018; Can, 2019; Can, 2017; Facun & Nool, 2012; Harç, 2010; İymen, 2012; İymen & Duatepe Paksu, 2015; Kayhan Altay, 2010; Lin, Yang, & Li, 2016; Markovist & Sowder, 1994; Mohamed & Johnny, 2010; Singh, Rahman, Ramly & Hoon, 2019; Şengül & Gülbağcı, 2012;

Takır, 2016; Yang, 2005; Yang, 2018; Yang & Li, 2008; Yang & Sianturi, 2019; Yang & Sianturi, 2020; Yapıcı, 2013; Yapıcı & Altay, 2017; Yenilmez & Yıldız, 2018). According to the findings of the study by Aunio, Niemivirta, Hautamaki, Luit, Shi & Zhang (2006), there were notable variations found between the kids of different ages (55-99 months) when we looked at the preschool level studies. As the age of students increased, it was observed that there was an increase in number sense, calculation and relational skills. In his study, Kilimlioğlu (2018) determined that there is a positive relationship between interactive and competent play and verbal language achievement and number sense of children aged between 5 and 6, and a negative significant relationship between low-level play alone and verbal language achievements and number sense.

The low number sense performance of the students and the tendency of students to use rule-operation-based methods may be a result of the activities in the Preschool Education Program (MEB, 2018), Mathematics Curriculum and textbooks. The lack of number sense as a program concept, the objectives' tangential relationship to number sense, and the paucity of number sense activities in mathematics activity books could all have an impact on students' number sense performance (Çekirdekçi, 2015). In light of this, it is imperative to investigate whether or not students perform poorly in number sense, whether or not preschool curricula in our nation include objectives pertaining to the concept of number sense, whether or not lessons adequately incorporate activities and objectives related to this subject, and how much the teachers are knowledgeable about number sense.In conclusion, given the low performance of students in number sense, students should be supported to think flexibly, make logical guesses, and develop different solutions and strategies in problem-solving questions. In addition, more detailed data can be obtained with qualitative analyses by conducting interviews over the answers given to the questions to better determine the status of students in number sense. Experimental studies can be conducted to improve children's number sense performance.

Suggestions

Flexible calculation and counting strategies as well as knowledge and skills about numbers are among the skills that need to be developed in kindergarten students. For this reason, suggestions for preschool teachers and those who write books on this subject are that children should have an intuition about how big numbers are. For example, it would be useful to include activities such as How many marbles can a jar hold? The development of estimation skills should not be neglected here. The use of number lines or number strips will be materials that contribute to the understanding of the location of the number (For example, where is 7 closer between 0-10? etc.) Likewise, studies based on visual skills, such as number pairs that make up a number, should be emphasized towards abstract thinking. From another point of view, the conservation of objects/quantities is also of great importance in the development of number sense. Emphasis can be placed on the idea that the result does not change even if the location of the objects changes. For example, how many ways can five cars be parked on a certain line in a part-whole relationship (3+2, 4+1, etc.) will improve children's ability to use numbers flexibly.

As for suggestions for the researchers, considering that number sense develops from infancy, this study was conducted with a limited number of students. It is also important to investigate why students tried rule-based solutions more often.

Ethics and Conflicts of Interest Approval

This study is produced from the first author's doctoral thesis completed under the supervision of the second author. The study has undergone appropriate ethics protocol. The author(s) acted in accordance with the ethical rules in all the parts of the study such as data collection and there is no conflict of interest between the authors. This study was ethically approved by the Gazi University Ethics Commission's decision dated 07 April 2020 and numbered 91610558-302.08.01. Informed consent was obtained from the participants. No funding was received for the conduct of this study.

The ethical approval for this research was obtained from the Ethics Committee of the Gazi University Rectorate on 07.04.2020 with the decision number 91610558-302.08.01. The authors of the study acted

in accordance with ethical rules in all processes of the research. There are no individuals or financial relationships that could be perceived as potential conflicts of interest related to this study

Contribution Rate of Authors
The authors contributed equally to this article.

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INVASTIGATION OF PATIENT AND HOSPITAL PERCEPTIONS OF CHILDREN PARTICIPATING IN EDUCATION AT THE HOUSE OF COMPASSION

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Abstract

This study was conducted to determine the perceptions of children, one of whose relatives was undergoing chemotherapy treatment and who participated in education at the House of Compassion, about the patient and hospital perceptions and their views on the House of Compassion. Case study design, one of the qualitative research designs, was used. Criterion sampling, one of the purposeful sampling types, was used to determine the study group. The study group consisted of 20 children who participated in the training at the House of Compassion in a hospital in Ankara and one of whose relatives was undergoing chemotherapy treatment. In the study, "Demographic Information Form" was used to collect information about children and parents, "Child Interview Form" and "Children's Pictures" were used to determine children's perceptions of patients, hospital and House of Compassion. The data obtained were analyzed using the descriptive analysis technique. As a result of the research, it was observed that children knew the definition of the hospital, the personnel working in the hospital, and the practices carried out, and emphasized the healing and therapeutic aspects of the hospital. Children reported coming to the House of Compassion to play games, have fun, and have a good time. It was determined that children felt happy and sound in the House of Compassion and that they liked the House of Compassion. As a result, it can be said that the House of Compassion has positive effects on children's perceptions of the patient and the hospital.

Keywords: Children, cancer, chemotherapy, house of compassion.

INTRODUCTION

A disease is a pathological condition that can be diagnosed through competent medical analysis (Amzat & Razum, 2014). In a broad sense, illness is a process that includes the way the ill individual and family members perceive the illness and their reactions to the illness (Kleinman, 1988). According to the family systems theory (Bowen, 1978), there is a balanced and dynamic cycle of functionality among family members and the condition of one family member affects other family members (Issel et al., 1990; Veach, 1999).

The experience of cancer disease can be considered as a traumatic process that afters both the order of daily routine and the lives of patients and their relatives (Onan & Taşdelen, 2024; Yadigaroğlu, 2019).

Long-term and risky diseases such as cancer require reorganization of daily life. At the same time, it can also cause various differentiations in the personalities of individuals who experience the disease (Green et al., 2007). When a parent is diagnosed with cancer, it has a broad range of consequences for all family members and has profound effets on parenting and family functioning (Landi et. al., 2024). Having a parent with cancer is stressful because the caregiving roles between the patient, parent, spouse and children can change according to the dynamics of cancer and family dynamics (Dieperink & Semple, 2023). In particular, the fact that the parent is less physically and emotionally available can affect the child's development and parent-child relationships (Babore et al., 2023; Faulkner & Davey, 2002). It has been found that when a parent is diagnosed with cancer, all family members and family relationship are affected by the disease (Huizinga et al.). The disruption of the daily routine in the family, the change of roles in the home, and the social, emotional, and economic stress experienced by the parents are especially effective on the emotional states of children (Korneluk & Lee, 1998; Purc-Stephenson & Lyseng, 2016). Research shows that children whose parents are undergoing cancer treatment are at high risk for behavioral, physical functions and emotional, social, and cognitive problems (Morris et al., 2018; Walczak et al., 2018; Weaver et al., 2010). In such cases, the effects on the child may vary according to age, gender, whether the parent with cancer is a mother or a father, the nature of the disease and treatment effects, the child's attachment to the sick parent, and family dynamics (Weaver et al., 2010).

On the other hand, it has also been suggested that parental cancer may affect the psychological state of children and the marital quality of parents (Armsden & Lewis, 1994; Christ et al., 1994; Compas et al., 1994, 1996; Northouse & Peters-Golden, 1993; Veach, 1999).

As a result, cancer disease and the accompanying treatment process is a process that causes a decrease in the overall quality of life and disruption of the integrity of life of both the patient's parents and their relatives depending on the effects it has on the individual's personality and daily life (Green et al., 2007; Götze et al., 2015).

In a broad sense, illness is a process that includes the way the ill individual and family members perceive the illness and their reactions to the illness (Kleinman, 1988). According to the family systems theory (Bowen, 1978), there is a balanced and dynamic cycle of functionality among family members and the condition of one family member affects other family members (Issel et al., 1990; Veach, 1999).

Today, how children cope with a parent's cancer has become a topic of increasing interest to researchers (Alexander et al., 2023; Faccio et al., 2018; Morris et al., 2019). The increase in the number of people struggling with cancer all over the world has brought to the agenda the necessity of making various plans to support both the sick parent and his/her family. However, given the impact of parental illness on the entire family system, there is a growing awareness of the best ways to support the patient and their relatives during the treatment process (Asiedu, 2024). At the same time, not only assessing patients' physiologically changing and developing symptoms throughout the diagnosis and treatment process but also the social and psychological assessment of both themselves and their children has a significant impact on their well-being (Lewandowska et al., 2020). It is stated that the inclusion and support of all family members as well as the family member with cancer in the treatment process is important in terms of improving family functionality (Korkmaz, 2024).

It is known that children need more support from their parents to meet their basic needs in the early period. In this period, children's adaptation to changes in the family and their developmental inability to cope with difficult situations cause their parents to be more affected by the disease process (Faulkner & Davey, 2002). Parents diagnosed with cancer have to balance between managing the disease precess and child care responsibilities, which can lead to Parental stress and have negative effects on family well-being (Landi et. al., 2024; Strandh et. al., 2023). This situation has brought the need to support children whose parents are undergoing cancer treatment to the agenda. Many studies have shown that support and intervention programs applied to children whose parents are undergoing

cancer treatment are effective in children's ability to cope with the psychological and social difficulties they experience related to the disease (Lewis et al., 2020; O'Neill et al., 2020; Phillips et al., 2022, Phillips & Prezio, 2017). However, some studies have shown that there is a lack of professional support for families affected by parental cancer (Semple & McCance, 2010); health professionals do not have the necessary competencies to provide this support (Grant et al., 2016), and there are difficulties in identifying support services (Martini et al., 2019).

Children should be supported in an age-appropriate manner to identify the impact of a cancer diagnosis, regulate and express their feelings and thoughts about it, and increase their psychological resilience (Visser et al., 2006). Comprehensive support can be provided to patients and their families during these challenging times through various activities organized by professionals such as social workers and healthcare providers (Shah et al., 2017). Phillips and Prezio (2017) found that the intervention program applied to children whose parents were undergoing cancer treatment had positive effects on children's communication skills, academic achievement, and coping with their anxiety.

With the development of health services day by day, hospitals have become not only treatment centers but also psychosocial support areas. In this respect, the importance of education and support services provided for the relatives of patients being treated in hospitals, especially children, is increasing. Our country has various applications where children whose relatives are undergoing treatment can spend effective and quality time in health institutions. House of Compassion, which provides education for children whose parents are undergoing cancer treatment, can be shown as an example of these practices. House of Compassion is a vital structure that contributes to children's education and psychosocial support in the hospital environment. Understanding the effects of the educational content offered in this context on children's perceptions of the hospital and the patient is essential to improving the quality of health services and ensuring that children are affected as little as possible by this process.

Thanks to such practices, children can get away from their anxieties and fears about the hospital and have the opportunity to see in a controlled way what their parents go through during the treatment process in the hospital. The study by Ellis et al. (2017) shows that school-age children with sick parents need a safe space to express their feelings and concerns. Because for the child, the illness and, accordingly, the hospital is a foreign environment that frightens, disturbs, and includes unpleasant experiences. The child does not know the hospital, the hospital staff, and the procedures to be performed there (Çavuşoğlu, 2011). In this respect, it is thought to be essential to reveal the perception of the patient, illness, and hospital in the child's life from the perspective of children who come to the hospital with their parents. Accordingly, this study investigates what shapes children's perceptions of patients and hospitals, which factors affect these perceptions and the role of the training provided at the House of Compassion in these perceptions. In addition, the limited number of studies on this subject in our country, especially the study of children in the hospital and the House of Compassion during the treatment process, strengthens the research's importance. It can be said that the results obtained from the research will shed light on projects, practices, and other studies to be conducted on this subject related to children whose parents are undergoing cancer treatment and their needs. On the other hand, it has also been suggested that parental cancer may affect the psychological state of children and the marital quality of parents (Armsden & Lewis, 1994; Christ et al., 1994; Compas et al., 1994, 1996; Northouse & Peters-Golden, 1993; Veach, 1999).

As a result, cancer disease and the accompanying treatment process is a process that causes a decrease in the overall quality of life and disruption of the integrity of life of both the patient's parents and their relatives depending on the effects it has on the individual's personality and daily life (Green et all., 2007; Götze et al., 2015).

This study was conducted to examine the perception of the patient and the hospital, the views of the children who participated in the education at the House of Compassion in a hospital in Ankara and

whose relatives were undergoing chemotherapy treatment in the hospital, and their views on the House of Compassion. For this purpose, answers to the following questions were sought.

1. What is the patient perception of the children who participated in the education at the House of Compassion and whose relatives were undergoing chemotherapy treatment at the hospital?
2. What is the hospital's perception of the children who attended the education at the House of Compassion and whose relatives were undergoing chemotherapy treatment at the hospital?
3. What are the feelings and thoughts of the children who participated in the education at the House of Compassion and whose relatives are undergoing chemotherapy treatment at the hospital about the House of Compassion?
4. What are the perceptions of patients and hospitals in the drawings of children who participated in the education at the House of Compassion and whose relatives were undergoing chemotherapy treatment at the hospital?

METHOD

Research Model

This study was conducted to examine the perceptions of the patient and the hospital, as well as the views of the children who participated in the education at the House of Compassion within a hospital in Ankara and whose relatives were undergoing chemotherapy treatment in the hospital, the phenomenological design, one of the qualitative research designs, was used. The phenomenological design is a research approach that aims to investigate phenomena that we encounter in various ways in daily life, of which we are aware but do not have an in-depth and detailed understanding (Yıldırım & Şimşek, 2021).

Study Group

Criterion sampling, one of the purposive sampling types, was used to determine the study group. Purposive sampling is a non-random sampling approach that allows for an in-depth investigation of information-rich cases based on the purpose of the study (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2020). Criterion sampling, a type of purposive sampling, involves studying all cases that meet a set of criteria determined by the researcher or prepared in advance (Yıldırım & Şimşek, 2021). In this context, units such as objects, events, etc., that meet the criteria specified for the sample are included in the sampling. In this study, the criteria determined by the researchers for including children in the study group are:

- Displaying typical development,
- Having a parent or close relative (such as a grandparent, uncle, or aunt) undergoing chemotherapy treatment at a Training and Research Hospital in Ankara,
- I have participated in education at the Şefkat Evi within the hospital.

The study group consists of 20 children who meet the criteria determined by the researchers, have participated in education at the Şefkat Evi within a hospital in Ankara, and have a relative undergoing chemotherapy treatment at the hospital. Demographic information about the children and their parents who form the study group is shown in Table 1.

Table 1. Demographic information of children and their parents.

Gender	**n**
Girl	11
Boy	9
Age of Children	
36-48 months	4
49-60 months	7
61-72 months	4
73 months and over	5

Table 1 (Continued). Demographic information of children and their parents.

Gender	n
School Attendance Status	
Continues	10
Discontinued	10
Type of School Attended	
Kindergarten	3
Primary education	7
Frequency of Visiting the Hospital	
Once a week	5
Once every two weeks	5
Once a month	7
Once every six months	3
Number of Siblings	
2	7
3-4	10
5 and above	3
Birth Order	
First child	4
Middle Child	5
Last Child	11
Mother Age	
31-35	2
36-40	6
41-45	5
46 years and older	7
Mother's Education Status	
Illiterate	2
Primary School	12
Middle School	2
High School	2
University	2
Mother's Employment Status	
Working	1
Not working	19
Father Age	
31-35	2
36-40	2
41-45	3
46 years and older	13

Table 1 (Continued). Demographic information of children and their parents.

Father's Education Status	
Primary School	7
Middle School	3
High School	5
University	5
Father's Employment Status	
Working	18
Not working	2
Proximity of the Parent to the Child Receiving Chemotherapy Treatment	
Mother	12
Father	2
Other (grandmother, mother, aunt)	6
Parent Treatment Duration	
6-11 months	11
1-2 years	9

Table 1 shows that 11 of the children were girls and 9 were boys. Four children are 36-48 months old, 7 are 49-60 months old, 4 are 61-72 months old, and 5 are 72 months and older. 3 of the children attend kindergarten, 7 attend primary school, and 10 of the children do not attend school. Among the children who participated in the study, 7 had two siblings, 10 had 3-4 siblings, 3 had five or more siblings, 4 were the first child, 5 were the middle children, and 11 were the last child. When the 'Frequency of Coming to the Hospital children is analyzed, 5 children come to the hospital with their parents once a week, 5 children once every two weeks, 7 children once a month, and 3 children once every six months.

When the ages of the mothers are analyzed, it is seen that the mothers of 2 children are 31-35 years old, the mothers of 6 children are 36-40 years old, the mothers of 5 children are 41-45 years old, and the mothers of 7 children are 46 years old and above. When the educational status of the mothers is analyzed, it is seen that most of the mothers are primary school graduates. 19 of the mothers are not working.

It is seen that the fathers of 2 children are 31-35 years old, 2 fathers are 36-40 years old, 3 fathers are 41-45 years old, and 13 fathers are 46 years old and above. 7 fathers graduated from primary school, three from secondary school, five from high school, and five from university. It is seen that 18 of the fathers are employed and 2 of the fathers are not.

In addition, 12 of the parents receiving chemotherapy treatment are the mothers of the child, 2 are the fathers of the child, and 6 are the paternal grandmother, maternal grandmother, or aunts of the child. Eleven of the parents have been receiving treatment for 6-11 months, while 9 of them have been receiving treatment for 1-2 years.

Data Collection Tools

"Demographic Information Form" to determine the personal information of children and parents, "Child Interview Form" to evaluate children's perceptions of "patient" and "hospital," and "Children's Drawings" on "Patient and Hospital" were used as data collection tools in the study.

Demographic Information Form
The Demographic Information Form includes questions about the children's and their parents' personal information (child's age, gender, number of siblings, birth order, parents' age, education level, employment status, duration of treatment, closeness to the child, etc.).

Child Interview Form
The Child Interview Form consists of eight semi-structured questions about the perception of "Patient and Hospital."

While preparing questions for child interview forms, studies in the literature were examined. As a result of the information obtained from the literature, child interview questions were created. The questions were submitted to expert opinion. The interview questions were presented to five field experts. Three of the experts are from the field of preschool education and two are from the field of child development. All of the academics have been working for more than 10 years. Care was taken to use clear and straightforward language to ensure that the children understood the questions more clearly. The form has been finalized according to expert opinions.

Child Pictures
In order to determine the patient and hospital perception of children who came to the hospital with their parents/relatives undergoing chemotherapy treatment, a drawing study on "Patient and Hospital" was conducted. Children were given papers of different sizes and different types of crayons to draw their pictures. The children were asked, "What is a hospital like? What is a disease? Let us draw a picture of the patient and the hospital." The children were instructed to draw a picture. Children were told about their drawings, and their thoughts reflected in their drawings about the perception of "Patient and Hospital" were evaluated.

Data Collection
In order to conduct the research in the House of Compassion within a hospital in Ankara, firstly, the ethics committee permission was obtained from İnönü University Ethics Committee by the decision dated 01.08.2022 and numbered 15/10. After the ethics committee permission was obtained, the necessary permissions for the research were obtained from the chief physician of the hospital where the study would be conducted. Then, it was decided to conduct the interviews one day a week by talking to the responsible teacher working in the House of Compassion within the hospital. Before the interviews, a consent form was obtained from the parents of the children who participated in the education at the House of Compassion. Consent was obtained from the children and their parents, and children who volunteered were included in the study. After the consent of the parents was obtained, demographic information forms were filled out in the presence of the parents. After the demographic information forms were completed, one-on-one interviews were started with the children. Before the interviews with the children, the children were introduced to each other and had a short chat, and then the interview questions were asked to the children. After the children completed the interviews, each child was asked, "What is a hospital like? What is the disease? Let us draw a picture of the patient and the hospital." A4 paper and crayons were given to each child, and they were asked to draw a picture of 'Patient and Hospital.' Children were given the opportunity to complete the drawing. Of the 20 children who participated in the study, 15 children participated in the drawing study, while five children did not want to draw. After the children had completed their drawings, they were talked to about their drawings and their opinions were taken about what they drew, what they wanted to tell, and what they felt. The researcher took notes of what the children said and completed the drawing study.

Data Analysis
The data collected in the research were analyzed using descriptive analysis techniques. In the descriptive analysis technique, the data obtained are summarized and interpreted under previously determined headings or according to the conceptual framework (Gürbüz & Şahin, 2018). The data from your study was analyzed by all three researchers. It was determined that the researchers' analyses were consistent. In the analysis of the data, evaluation was made by taking into account the answers

given to the questions asked in the semi-structured "Child Interview Form." The subject headings "Hospital," "Illness," and "House of Compassion" in the semi-structured "Child Interview Form" formed the themes, and the answers given by the children were analyzed and grouped according to their similarities to form sub-answers. Data collected under three themes were expressed in figures. The thickness of the relationship arrows was changed according to the frequency of sub-responses. For a clearer understanding of the data collected in the study, for example, Child 1 (C 1) was coded as Female (F), Male (M). In order to increase the validity of the study, direct quotations from the children's responses were included in the findings section. The children were asked to describe the "Patient and Hospital" themed pictures drawn by the children participating in the study; the children's narratives were noted, and their thoughts reflected in their drawings were evaluated.

RESULTS

In this section, the research findings derived from interviews conducted to determine the perceptions of illness and hospitals among the children who came to the House of Compassion, as well as the analysis of their views on their drawings, are presented.

Findings on Perceptions of Disease and Hospitals from Interviews with Children at the House of Compassion Hospital

Under the "Hospital" theme, the children participating in the study were asked the following questions: "What kind of a place is a hospital?", "What is done in a hospital?" and "Who comes to the hospital?". All of the children (f=20) answered the question, "What is a hospital like? What is done in the hospital?" they answered that the hospital is a place where treatment is provided. However, "It is a very nice place" (f=6), "It is a boring place" (f=1), "It is a normal place" (f=1), and "It is a place where reports are taken" were the other statements. In response to the question "Who comes to the hospital?", the majority of the children answered "Patients" (f=14). However, "Children" (f=3), "Parents/relatives" (f=2), "People who want to be examined" (f=2), "Customers" (f=2), and "Doctors" (f=1) were the other answers.

Some of the children's statements about the definition and content of the hospital and the people who come to the hospital are as follows.

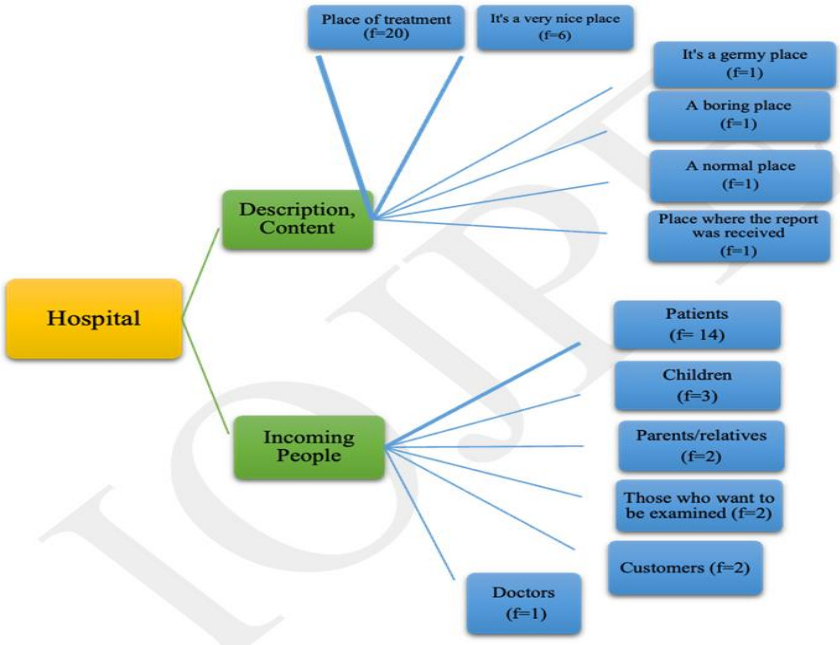


Figure 1. Children's views about the hospital.

"It is a very nice place. Patients are helped and examined. Those who want to be examined come here." (C2, F)
"In the hospital, needles and stitches are given. Patients are given medicine. Patients come for dressings and injections." (C3, F)
"It is a place that examines and heals patients. If you are sick and want to be taken care of, that is why you come. Patients come." (C7, M)
"It is a place that heals the sick. They listen to the heart with a telescope. We come when we are sick, and our illness does not go away. Patients come to the hospital." (C10, M)
"Patients are taken care of and examined. It is nice; I like this place very much. Patients come here to heal and be treated."(C11, M)
"It is a place that treats patients. There are departments. Blood is taken, and doctors examine them. Patients and doctors come to the hospital." (C15, F)
"It is a surgical center. Medication is given. Patients come." (C16, F)
"There are injections, examinations. There are tools. Patients whose illness does not go away come." (C14, F)

Disease

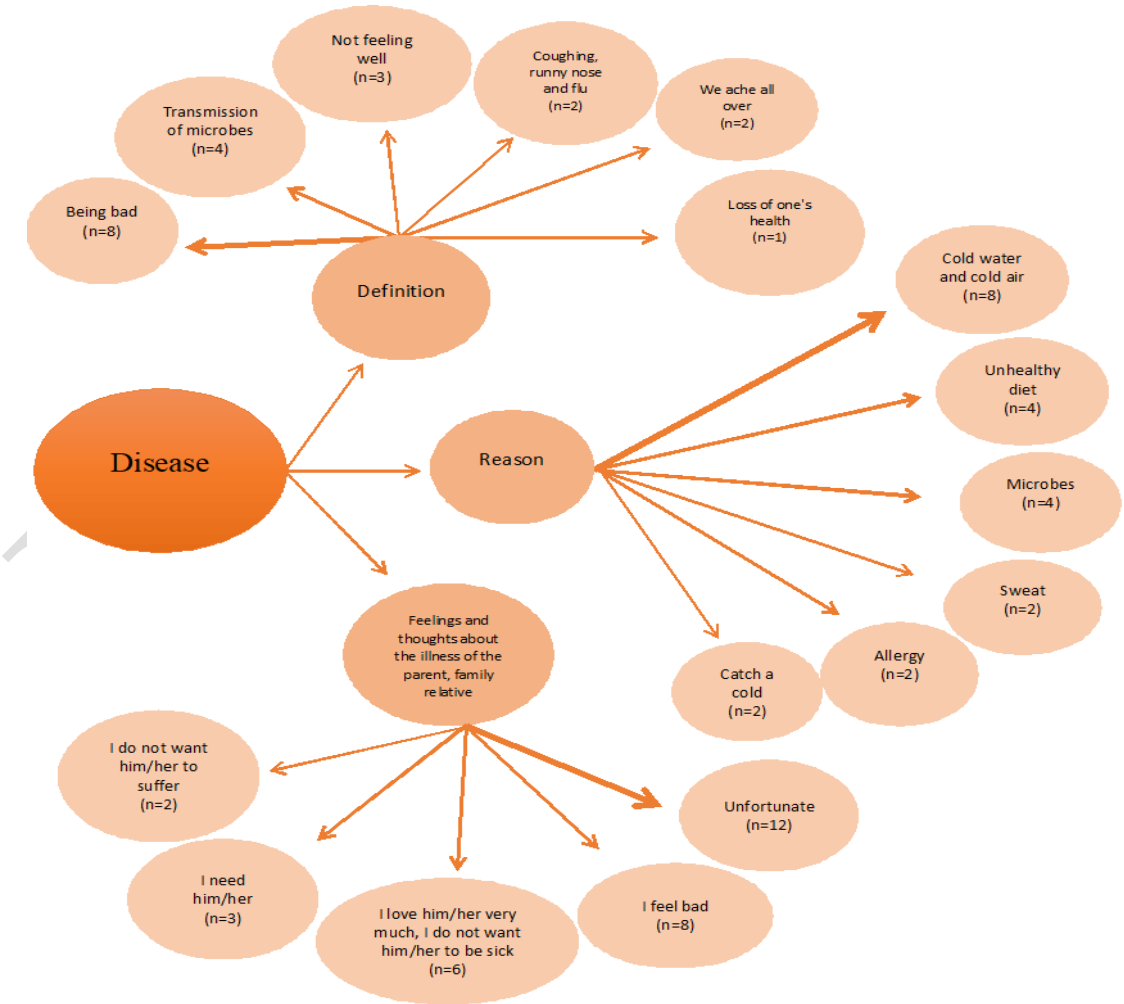


Figure 2. Children's views about the disease

Under the theme of " Disease," the children participating in the study were asked the questions "What does it mean to be sick?" and "Why do we get sick?". The majority of the children (f=8) answered "Being bad" to the question "What does it mean to be sick?". However, "Being contaminated by germs" (f=4), "Not feeling well" (f=3), "Coughing, runny nose and flu" (f=2), "Every part of us hurts" (f=2), and "Loss of one's health" are other expressions. In response to the question "Why do we get sick?", the majority of the children (f=8) stated that they get sick because of "cold water and cold air," while others stated that they get sick because of "unhealthy diet" (f=4), "germs" (f=4), "sweating" (f=2), "allergies" (f=2) and "catch a cold" (f=2).

Some of the children's statements on the definition of the disease and the causes of the disease are as follows:

"Not feeling well. We get sick when we sweat." (C1, F)

"It means something. If we catch a cold, we will get sick. " (C5, M)

"It means catching a germ from outside. Children get sick because they run a lot, sweat, and drink water." (C6, M)

"Coughing means having a runny nose and getting the flu. If you play in the cold and go out in a cold place, you will get sick." (C7, M)

"It means not feeling well. If we are allergic, we get sick, to flowers, etc."(C8, F)

"It is to be bad. If we drink cold water and do not wear warm clothes in cold weather, we will get sick." (C12, F)

"It is the loss of one's health. If we eat junk food and don't eat healthy, we will get sick." (C15, F)

"It means being bad. Because of overeating sugar." (C18, F)

After the children were asked questions about the definition and causes of the disease, they were asked: How does it make you feel when ..... (mother, father, grandmother, paternal grandmother, aunt...) is sick? The majority of the children stated that they felt "unfortunate"(f=12) due to the illness of their parents or relatives. However, "I feel bad" (f=8), "I love him/her very much, I do not want him/her to be sick" (f=6), "I need him/her" (f=3), "I do not want him/her to suffer" (f=2) were other statements.

Some of the children's statements regarding the illness of the parent or family member are as follows:

"I feel bad. If my mom wasn't sick, we would play games." (C2, F).

"I would not want my mother to be sick; I love my mother very much." (C3, F)

"I feel bad. I cannot hug my father because he has stitches." (C4, F)

"I feel unfortunate. I do not want my mother to suffer." (C6, M).

"Bad things. He/She cannot take me where I want to go." (C10, M)

"I would not want my mother to be sick; I feel bad when my mother is sick." (C14, F)

"I feel unfortunate because my mother is sick. I need her." (C17, M).

"I feel unfortunate; he always has stomach pain." (C20, M)

House of Compassion

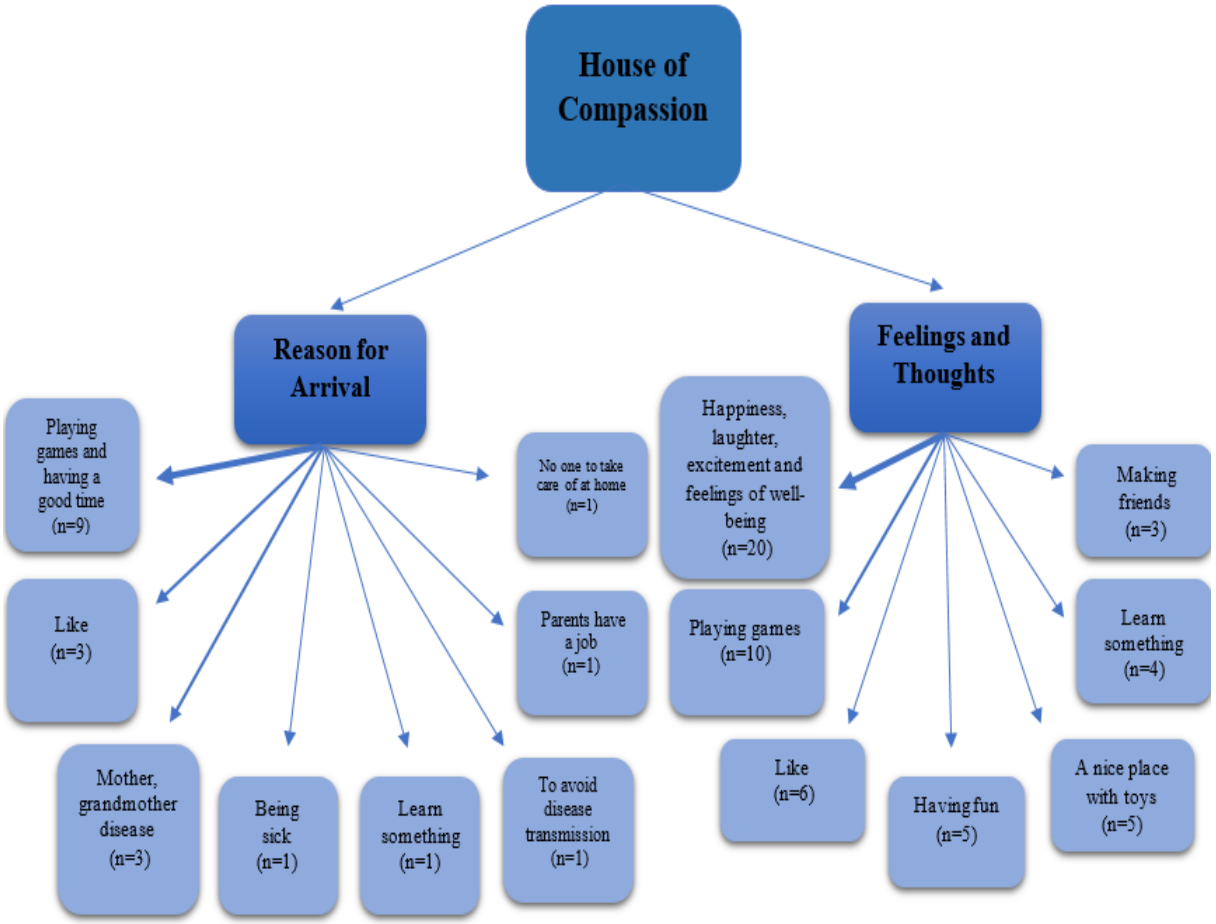


Figure 3. Children's views on the House of Compassion

Under the theme of "House of Compassion," the children participating in the study were asked the following questions: "Why do you come here (to the House of Compassion)?" and "How does coming here (to the House of Compassion) make you feel? What kind of a place is the House of Compassion?" questions were asked. The majority of the children (f=9) answered the question "Why do you come here (to the House of Compassion)?" as "Playing games and haveing a good time." However, some children stated that they came to the House of Compassion for reasons such as "Like" (f=3), " mother/grandmother disease" (f=3), "Being sick" (f=1), "Learn something" (f=1), "To avoid disease transmission" (f=1), " Parents have a job " (f=1) and " No one to take care of at home". "How does coming here (to the House of Compassion) make you feel? What kind of a place is the House of Compassion?" all of the children stated that the House of Compassion created feelings of "happiness, laughter, excitement" and that they "felt good" in the House of Compassion. Regarding the thoughts about the House of Compassion, most children (f=10) said they "playing games" at it. However, some children expressed thoughts such as "like" (f=6), "having fun" (f=5), "It's a nice one with toys place" (f=5), "learn something" (f=4), and "making friends."

Some of the children's statements about the reasons for coming to the House of Compassion and their feelings and thoughts about the House of Compassion are as follows.

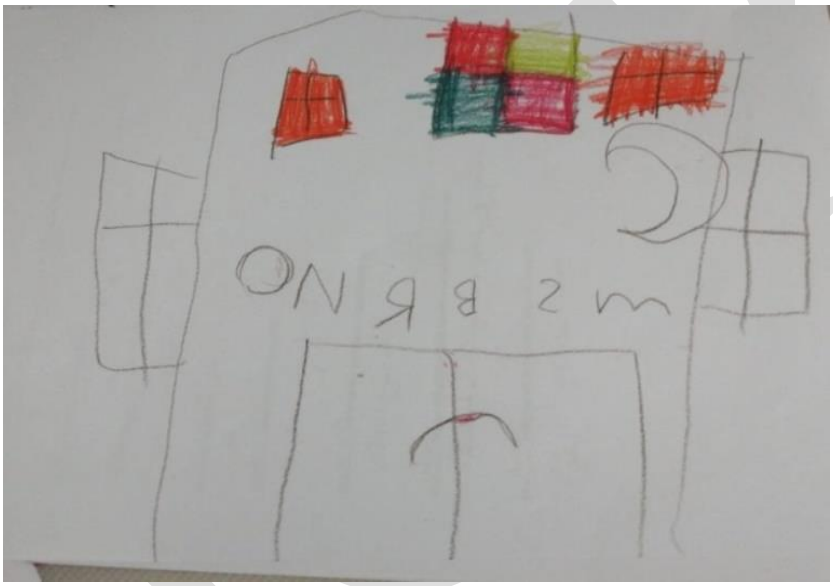
"Because my illness did not go away and I was not hospitalized. I like it here, I play games, it makes me feel good." (C4, F)
"I come here because I like it. I feel happy when I come here." (C9, M)

"I *come here because my mom is sick and comes here. I say, 'Mom, do not finish your work quickly because this place is so beautiful. I feel beauty, I get excited."* (C10, M)
"Because I don't want to get sick in the hospital. I have fun, it makes me laugh." (C11, M)
"I come here because my grandmother is sick. It is fun here; I am happy." (C13, F)
"*For fun. It is a nice place. My friends also come here. It makes me feel good to come here."* (C14, F)
"I come to play games. I am happy." (C17, M)
"I come because it is fun. I feel happy." (C19, M)
"*I come to play and learn something. It feels good*" (C20, M)

Findings on Perceptions of Disease and Hospitals in the Drawings of Children at the House of Compassion

Children express their feelings, thoughts, and opinions about situations and events through pictures, which provide essential information about the child's inner world and growth process and are a more effective means of communication than words at a young age (Yavuzer, 1995).
For this reason, within the scope of the study, research questions were asked of children, and findings were obtained through pictures.

It was observed that most children drew the House of Compassion and the hospital, including figures such as happy people, flowers, and the sun, preferred vivid colors in their drawings, and described their activities at the House of Compassion.



Picture 1. Picture of C3 on patient and hospital.

Children's views on their emotions and feelings are reflected in their drawings, and examples of drawings are given below.

In the drawings made by the children, it is seen that they mostly depicted the patient and the House of

Compassion within the hospital (C1, C2, C3, C6, C8, C9, C10, C13, C16). In these pictures, it was seen that they generally described the House of Compassion and the hospital as beautiful and fun places. Examples of this situation are shown in Picture 1 and Picture 2.

"I like it here; it is nice to be here." (C3, 4-5 years)

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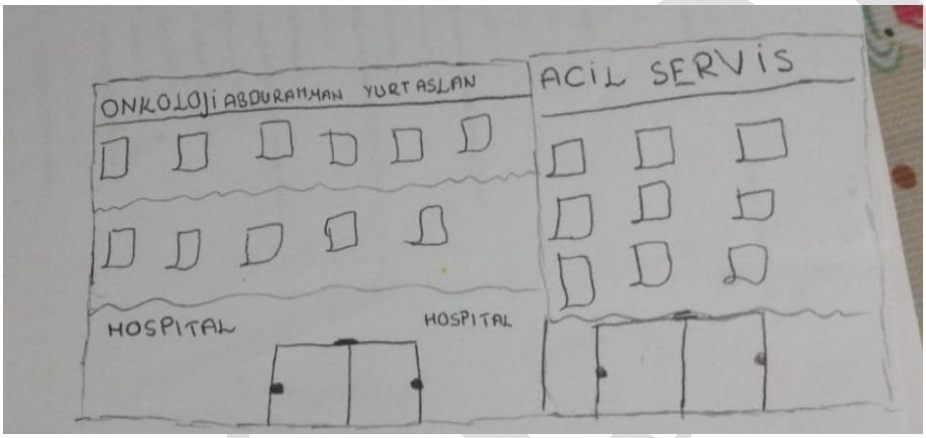
Picture 2. C2's Picture of patient and hospital.

"I drew the hospital, and next to it is the kindergarten; I like to have fun here." (C2, 5-6 years old)

Only the House of Compassion was drawn in some of the drawings made by the children, while in others, only the hospital was drawn. Examples of this situation are given in Picture 3 and Picture 4



***Picture 3**. Picture of C13 on Patient and Hospital*

I drew this place because being here makes me happy; I have fun here." (C13, age 7)

Picture 4. *Picture of C6 on Patient and Hospital*

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"I drew the hospital I come to, my mother is sick, and I come here with her. I am happy here." (C6, 4-5 years old)

Children mostly expressed that they liked the hospital and House of Compassion and were happy playing games with their friends and the teacher.

In some of the pictures, children drew their families, sick parents, and doctors (C4, C5, C7, C11, C18, C19). Sample pictures of this situation are shown in Picture 5 and Picture 6.

Picture 5. Picture of C18 on Patient and Hospital

I drew the doctor and my mother because doctors heal my mother. I come here with my mom because I cannot stay alone at home." (C18 5-6 years old)

Picture 6. Picture of C4 on Patient and Hospital
"These are my family. They do not let me see my father because he is sick, I feel sad."(C4, 4-5 years old)

When C4 was asked, "Why are you and your family sad?" she replied, *'" Because I cannot hug my father; he has stitches, they do not let me see him. That is why we are sad.*

DISCUSSION, CONCLUSION, and SUGGESTIONS

According to the first finding of the study conducted to determine the perception of the patient and the hospital and the views of the children, one of whose relatives was undergoing chemotherapy treatment and who participated in the education at the House of Compassion about the House of Compassion, all of the children who participated in the study defined the hospital as a place where treatment is provided. This finding shows that children know the primary function of the hospital. This is thought to be due to children's frequent visits to the hospital and their family life. However, in addition to the answers related to the definition of the hospital, such as it is not a suitable place for children, a place with germs, or a regular place, there were also children who stated that the hospital is a fun place. This finding shows that spending time at the House of Compassion while their parents were being treated positively affected their feelings and thoughts about the hospital. When the opinions of the children about who came to the hospital were examined, it was found that the majority of the children were patients, while the other children gave the following answers: children, those who wanted to be examined, my grandmother, my relatives, mothers and fathers, and doctors. This finding shows that children make statements that reflect the reality as a result of the hospital experiences they frequently experience in their daily lives. When the literature is examined, the studies examining children's perception of hospital, hospital staff, and illness in Turkey are generally studies conducted with children whose parents are not sick and who themselves are sick (Boztepe et al., 2017; Küçük et al., 2020; Manav, 2013; Pekyiğit et al., 2021; Perktaş & Özmert, 2017; Şahinöz, 2019; Taşdemir Akkavak & Sarıkaya Karabudak, 2019; Uysal et al., 2017). Pekyiğit et al., (2021) examined the thoughts of hospitalized school-age children about illness and hospitalization through creative play and sentence completion test. As a result of the study, children defined being healthy as feeling good and having difficulties, while being ill is feeling bad, being separated from family and friends, leaving school, and not being able to do anything. In another study, it was found that children between the ages of 6 and 12 had expectations from hospital staff and the hospital, such as being treated well, having painless procedures, playing games, having playgrounds and toys, and having spacious rooms (Boztepe et al., 2017). As a result of a study examining the effect of the "Hospital Clown" project for hospitalized children on children's perceptions of the hospital, it was determined that the "Hospital Clown" project, which is a psychosocial support application applied to children, positively affects children's perceptions of the hospital (Perktaş & Özmert, 2017).

According to another finding of the study, while defining illness, children mostly interpreted illnesses in their own way and gave definitions such as being evil, being infected by germs, not feeling well, and associated the causes of illness with examples related to their own lives and experiences such as drinking cold water, germs, and unhealthy nutrition. When the children's feelings and thoughts about their parents' and relatives' illnesses were analyzed, it was observed that they were unfortunate, they felt terrible, they were aware of the pain of their parents and relatives, they did not want them to get sick because they loved them very much, and they were sad because they could not spend time with them. Cancer is an experience that not only affects the patient but also deeply shakes the family life (Visser et al., 2006).In the case of a parent's cancer, long-term treatments, frequent clinic visits, and the transformation of the home into a place of care disrupt the routine and program within the home and the disruption of the daily routine, which is an essential part of the lives of preschool, primary school, and adolescence children, negatively affects children and adolescents psychosocially (Shah et al., 2017). Stressful events such as the patient's dependence on others, changes in physical appearance, social stigmatization, and declines in socioeconomic status are not only related to the coping of the sick parent but also affect the development of children (Romer et al., 2002). Considered as a chronic stressor, parental cancer can cause psychological distress, increased depressive symptoms, anxiety, behavioral/emotional problems, stress reactions and poor quality of life from early childhood to young adulthood (Marin- Chollom & Reverson, 2022). Children whose parents have cancer are at high risk

for psychosocial, emotional and behavioral problems (Alexander et. al., 2023). Therefore, it is necessary to develop targeted interventions that provide support not only to the patient bur also to the whole family system in case of Parental cancer (Perak, et. al., 2024). Karayağmurlu et al., (2021) conducted a study to evaluate depression, anxiety and quality of life of children and adolescents whose parents were diagnosed with cancer and found that depression and anxiety rates of children whose parents were diagnosed with cancer were higher than children whose parents were not diagnosed with cancer, They found that the quality of life levels were low and emphasized the psychological effects of parental cancer on children and stated that the psychosocial effects of cancer should be evaluated and family-based, multidisciplinary approaches should be adopted. In another study, it was found that the mean scores of anxiety, depression, and negative self-image of children with a parent with cancer were higher than those of other children; the roles of children in the family changed, and they experienced some difficulties after the parent became ill, and it was stated that the psychosocial care of family members, especially children, should not be ignored in the treatment process of patients with cancer (Küçükoğlu, 2007). In a study conducted with children who last one of their parents to cancer, it was found that children needed more psychological support, especially when their parents' illness progressed rapidly and during the first six months after death (Høeg et. al., 2023) and children's mental health is negatively affected (Kravdal et. al., 2024). As seen in the related research findings, parental cancer affects children psychologically and reduces their quality of life. When we look at the findings of this study, children stated that their parents were sad about their relatives' illness, that they needed them, and that they did not spend time together. However, they positively expressed the time spent at the House of Compassion during the treatment of the parent. While the children who participated in the study had positive perspectives about the hospital, their perspectives about the disease were negative. It can be said that the time they spent at the House of Compassion had an effect on their positive view of the hospital, while the illness of the parent, family member, and their own experiences had an effect on their negative view of the illness. The fact that the children described the disease as bad emphasized the healing and therapeutic aspect of the hospital and evaluated the hospital environment positively shows that the House of Compassion application is a family-based application and provides psychosocial support for children whose parents or relatives have cancer, and positively affects the perspectives of young children towards the hospital.

Children's negative perspectives on the disease shaped by personal experiences, such as being sick, coughing, and feeling sad about their parent's illness, and children's statements did not include information about the severity of the parent's or family member's illness, such as cancer. There were no indications that parental cancer significantly affected the child's social and emotional development. It is thought that the reason for this situation may be due to the age group of the children, the statements they gave within the scope of the research, and their daily life experiences. When the literature is examined, it is seen that there are studies that support this finding. In one of these studies, social and emotional changes in children and adolescents were examined in the one-year period after their parents were diagnosed with cancer. As a result of the research, it was observed that most of the children, particularly those in the younger age group, experienced fewer or similar problems compared to both the norm group, whose parents had not been diagnosed with cancer, and the group whose parents had been diagnosed 1 to 4 years earlier. (Visser et al., 2007). In another study, parent and child reports were obtained on the social and emotional problems of children whose one parent was diagnosed with cancer. Parents reported little emotional distress or disturbing behavior in their children. However, unlike their parents, adolescent girls reported high levels of anxiety, depression, and aggressive behavior. While children's reports of problems decreased in subsequent assessments, those of parents remained the same (Welch et al.,1996). As seen in the research findings, children's problems due to parental illness may not be detected. However, this does not mean that children are not negatively affected by the illness. As a matter of fact, as in other research results mentioned above, children can also be affected negatively by parental cancer (Karayağmurlu et al., 2007). Parental cancer poses an emotional threat to the child. Research results vary according to whether children or parents report symptoms, whether the mother or father has cancer, and the age and gender of the

children (Welch et al.,1996). Therefore, it is essential for families and specialists to observe children whose parents have cancer in accordance with their age and developmental level and to provide appropriate support in order to prevent possible problems.

When the opinions of the children who participated in the training at the House of Compassion while their parents or close relatives were undergoing chemotherapy treatment were examined, the majority of the children stated that they came to the House of Compassion to play games, have fun, and because they loved them. In addition, there were children who stated that they came because of their parents' illness, to prevent disease transmission, and because there was no one at home to take care of them. It was determined that the children had feelings of happiness, laughter, excitement, and feeling good about the House of Compassion, that they played games at the House of Compassion and liked it, had fun, learned something, and made friends. These findings show that some of the children were aware that they came to the House of Compassion because of their parent's illness. The fact that the children did not have negative feelings and thoughts towards the House of Compassion, that they liked the House of Compassion, had fun, and learned new things shows that the children were supported positively in terms of psychosocial aspects during the treatment of their parents and relatives. Some studies analyzed in a study examining the studies conducted between 1985 and 2015 to determine the psychosocial needs of children and adolescents with parental cancer showed that children between the ages of 5-18 with parental cancer need a "safe space" where they can express their feelings and concerns (Ellis et al., 2017). In a study conducted with children aged 10-18 whose parents had a mental illness, it was concluded that children felt fear, self-blame, and loneliness related to their parent's illness (Östman, 2009). As seen in the research findings, children with a parent with a severe illness are at risk for psychosocial and emotional disorders (Huizinga, 2006; Romer et al., 2002). Children with parental cancer may have a wide range of informational, social, emotional, and practical needs, many of which cannot be met without planned specialized interventions (Ellis et al., 2017). From the perspective of family system theory, the family structure is a complex and integrated whole, and changes that occur in one parent in the family, such as parental cancer, affect all family members, and parents, spouses, and children may have unique reactions to the disease (Huizinga, 2006). For this reason, it is essential to increase the quality of practices such as House of Compassion for psychosocial support of children whose parents have cancer or other diseases in order to prevent children from being negatively affected by parental cancer or to overcome this process with minimal damage. There are various programs, practices, and organizations that support cancer parents and their families. One of these is an organization that aims to provide psychological support for young people who have cancer themselves or their relatives (Canteen, ty.), and another is the "We Strengthen Bonds / Family Communication in Cancer Treatment" program (Lewis et al., 2016), which is implemented in different regions such as America, Europe, Japan and Turkey (Neolife, 2015) to reduce the emotional depressive states of mothers and improve the behavioral-emotional adaptation of mother and child against cancer, 2016). The Şefkat Evi (House of Compassion), which was examined within the scope of the research, is a project established by the Turkish Red Crescent Society to support children whose parents or relatives are undergoing cancer treatment and to provide free education within a hospital in Ankara. Within the scope of the project, individual and group psychosocial support activities, workshops, drama, handicrafts, art, and design activities are carried out in the playground opened under the name of Şefkat Evi Children and Entertainment Center (Kızılay, 2018). In a study conducted by Lewis et al. (2016), it was found that the depressive mood and parenting skills of mothers with cancer who participated in the Strengthening Bonds Program improved positively, children showed improvement in behavioral and emotional adaptation, and externalization problems, anxiety and depressive moods decreased significantly. According to another study examining the effects of a preventive family support program prepared for children aged 5-18 whose parents had incurable cancer on children, it was found that children felt safer, and their knowledge and understanding increased after the program (Bugge et al., 2008). As revealed in the findings of the current study and related studies, children with cancer parents need areas where they can feel safe and be supported socially and emotionally.

Within the scope of the research, in addition to the child interviews, a drawing study on "patient and hospital" was conducted with children. Drawing is a communication tool that provides non-verbal communication with the child, where the child can express his/her feelings comfortably and is one of the techniques that can be used to obtain information about children's hospital experiences (Erçin & Çetinkaya, 2019). In the related literature, there are studies in which children's drawings were used to evaluate children's perceptions of hospital staff (Taş et al.,2006; Uysal et al., 2018), their perceptions of hospitalization (Wilson et al., 2010), and children with cancer's feelings of self-esteem, anxiety, and aggression (Köçkar & Gürol, 2013). As a result of the research, it was observed that children reflected their feelings and thoughts about the patient and the hospital in their drawings. However, it was observed that the child and other family members were sad in one of the drawings and that the child expressed that he could not contact his father because of his father's illness. The emotions reflected in the children's drawings were in line with the findings obtained from the interviews. Children portrayed the hospital environment as a positive, fun, and pleasant place to spend time. It is seen that the fact that the House of Compassion is located within the hospital and that children have fun and play games at the House of Compassion while their parents are being treated prevents the negative perspective of the majority of children toward the hospital. The feelings expressed by the children towards the House of Compassion in their drawings support this situation.

As a result, it was determined that children had a positive perspective towards the hospital, defined the concept of disease mainly based on their own experiences, and did not have detailed information about cancer from their parents and relatives. It was inferred that the House of Compassion within the hospital was effective in children's perspectives on the hospital and cancer in their parents and relatives.

The current study was designed using a qualitative method. In other studies to be conducted, quantitative data collection tools can be used with a larger sample size, and generalizable results can be obtained regarding the effect of House of Compassion on children's perceptions of hospitalization and illness. Within the scope of the research, only children's feelings and thoughts were addressed. In other studies to be conducted on the same subject, the effects of psychosocial interventions in the cancer process on children can be addressed more comprehensively by taking the opinions of the staff of the House of Compassion, Support Program, etc., and parents together with the children. The findings of the current research show that House of Compassion has positive effects on children whose parents or relatives are undergoing cancer treatment. Similar training and playgrounds can be planned in other hospitals in different provinces and countries and in other departments of hospitals with oncology to provide psychosocial support for children during the illness of their parents and relatives.

Ethics and Conflict of Interest

This research has an ethics committee permit issued by the Inonu University Ethics Committee on 01.08.2022 with the decision numbered 15/10. All rules specified in the “Higher Education Institutions Scientific Research and Publication Ethics Directive” were followed throughout the entire process from the planning to implementation of this research, from the collection of data to the analysis of the data. None of the actions specified in the second section of the directive, titled “Actions Contrary to Scientific Research and Publication Ethics”, were carried out. Scientific, ethical and citation rules were followed during the writing process of this research; no falsification was made on the collected data. This study has not been sent for evaluation to any other academic publication environment. There is no conflict of interest among the authors of the research. In addition, the authors declare that they do not have any conflict of interest with other persons, institutions or organizations.

Author Contribution

All authors contributed equally to the research.

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