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Determining the Effect of Mobile Learning for Nursing Students' Related to Time Management

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ABSTRACT

Objective: This study was conducted to determine the effect mobile learning has on time management for nursing students.
Materials and Methods: This descriptive and correlational study was conducted with 140 nursing students of a nursing college in Istanbul between October and November 2021. Data were collected using the Student Information Form, Attitude Scale Towards Mobile Learning, and Time Management Questionnaire. Data analysis was performed using the Mann- Whitney U test, Kruskal-Wallis H test, Spearman correlation, and Bonferroni Post Hoc Test.
Results: The mean age of the students was 20.94±2.30 years. The mean total scores of the Attitude Scale Towards Mobile Learning and Time Management Questionnaire were 160.24±37.58 and 89.04±12.24, respectively. A significant difference was found between the mean scores of the Attitude Scale Towards Mobile Learning and Time Management Questionnaire according to age groups, study class, internet access method, and the device they frequently used ($p<0.05$).
Conclusion: Nursing students' possessed a positive attitude toward mobile learning and time management. In addition, the students' characteristics effectively ensured their attitudes toward mobile learning and time management.
Keywords: Mobile learning, attitude, time management, nursing students

INTRODUCTION

Mobile learning involves learning in different locations using internet technologies, with learners accessing content with the help of portable digital technologies (1-3). At the same time, mobile learning is a method that improves students' achievement, motivation, and problem-solving skills. Because of this, it has attracted the attention of many students (4-6).

With the global impact of the COVID-19 pandemic, mobile learning has subsequently enabled students to organize the educational process according to their needs and learning styles (3, 4, 7). Studies on the use of mobile devices in education emphasize that they are helpful in student education and assist in the permanent acquisition of information (8, 9).

In nursing education, where theory and skill education are used together, it is especially important for the students to possess sufficient knowledge and skills to provide quality care (4, 10). In today's nursing education all over the world, it has become mandatory to include technological approaches in the curriculum to provide students with competence in clinical practice (3, 4, 11, 12). In addition, the COVID-19 pandemic has profoundly affected nursing education, in the same way it has affected all education and training methods, by hastening the process. Under the current systems, mobile learning can be quickly realized, independent of place, time, and space. Mobile learning, recently introduced into clinical education, is a new form of learning that uses wireless network technology and communication equipment to acquire educational information, resources, and services (1, 13).

Realizing educational methods through mobile learning platforms makes obtaining information and learning more accessible. However, the widespread and easy accessibility of mobile learning, which has such positive effects as mentioned above, also introduces problems related to time management (14, 15). Because mobile learning facilitates long-distance learning and prolongs the time the students spend in front

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Table 1. Characteristics of nursing students (n=140)

Variables		n	%
Average age x̄±S.D=20.94±2.30 year			
Age groups	≤19	36	25.7
	20-21	60	42.9
	≥22	44	31.4
Gender	Woman	105	75.0
	Men	35	25.0
	1st grade	42	30.0
Class	2nd grade	27	19.3
	3rd grade	36	83.6
	4th grade	35	25.0
Average CGPA x̄±S.D=3.16±0.41			
CGPA	2.00 - 2.99	23	16.4
	3.00 - 4.00	117	83.6
Marital status	Single	135	96.4
	Married	5	3.6
Device often used in learning	Smartphone	61	43.6
	Laptop	59	42.1
	Computer	16	11.4
	Tablet	4	2.9
Intended use of smartphone	Education	9	6.4
	Communication	109	77.9
	Listening to music	19	13.6
	Game play	3	2.1
Daily smartphone use	1 hour	2	1.4
	2 hours	13	9.3
	3 hours	47	33.6
	4 hours or more	78	55.7
Mobile learning time	10 min.	4	2.9
	20 min.	11	7.9
	30 min.	27	19.2
	40 min. and over	98	70.0
Internet access method	Own mobile Wi-Fi	33	23.6
	Own Wi-Fi	50	35.7
	Dormitory/home Wi-Fi	57	40.7

S.D.: Standard Deviation, CGPA: Cumulative Grade Point Average

of screens, it may negatively affect the manner in which students spend time in their daily lives. Mather et al. (2016) stated in their study that mobile learning facilitates effective time management (16). Accordingly, nursing students' use of mobile learning in university directly relates to effective time management (17). When examining nursing education, students may have difficulty managing their time because the course curriculum is intensive and because nursing is an applied field

Table 2. Attitude Scale Towards Mobile Learning and Time Management Questionnaire scores of nursing students (n=140)

Scales	Mean	S.D.	Median	Min.	Max.	Cronbach- α coefficient
Attitude Scale Towards Mobile Learning	160.24	37.58	164.0	45.0	225.0	0.978
Satisfaction	72.16	19.92	74.0	20.0	100.0	0.980
Effect to Learning	43.39	10.67	44.0	11.0	55.0	0.971
Motivation	24.71	7.19	25.0	7.0	35.0	0.966
Usability	19.98	7.47	20.0	7.0	35.0	0.926
Time Management Questionnaire	89.04	12.24	90.0	55.0	117.0	0.806
Time Planning	51.49	11.09	51.0	20.0	76.0	0.900
Time Attitudes	23.76	3.52	24.0	15.0	35.0	0.819
Time Wasters	13.78	3.68	14.0	4.0	20.0	0.712

S.D.: Standard Deviation, Min.: Minimum, Max.: Maximum

(18, 19). In addition, because nursing students who study under such programs are prone to changing their location frequently, they may encounter issues when using time effectively (20). Therefore, nursing students must learn to manage time to work efficiently after completing their education (18, 19). The main goal of time management is to enable individuals to plan their lives and tasks (21) adequately. Proper time management is also crucial in allowing the students to reach their personal and career goals by providing such opportunities as increasing productivity, reducing stress, and seizing opportunities through mobile learning platforms (22). At the same time, nursing students, who will become critical team members of the future healthcare system, will have to manage their time while fulfilling their roles and responsibilities to protect and improve the health of the individual, family, and society, offering cures in the event of illness (3). Education is one of the most influential factors in terms of shaping individuals and causing them to set goals throughout the course of their lives (11). Appropriate use of time management in lessons and extracurricular activities in educational life requires skills. Realizing these skills and integrating mobile learning will enable nursing students to properly express themselves and find success (4). This study aims to determine the effect of nursing students' attitudes on time management regarding mobile learning. The research questions were the following:

1. What are the students' attitudes towards mobile learning and time management?

2. Is there a difference between mobile learning and time management levels according to the individual characteristics of students?

3. Is there a relationship between students' attitudes towards mobile learning and time management?

MATERIALS AND METHODS

Research Type

This study was conducted along the descriptive and correlational type.

Participation in the Study

The study population consisted of nursing students (N=366) studying at a nursing college in Istanbul between November 8 and November 22, 2021. The goal was for the sample to reach at least 132 students with a 5% margin of error and 95% confidence interval, taking into account the average duration of smartphone use as reported in the literature (23). However, considering possible lapses in data, approximately 10% more than the required sample number was used, bringing the number to 140 nursing students. The criteria for inclusion in the sample included: the individuals were nursing students, they were actively continuing their education and training, they playing computer/video games, and they do not have any communication problems.

Data Collection Tools

The study data were collected through the Student Information Form, Attitude Scale Towards Mobile Learning, and Time Management Questionnaire (TMQ).

The Student Information Form

The form, developed by the relevant literature (1, 6, 7, 19), consisted of 10 questions about the student's age, gender, grade, Cumulative Grade Point Average (CGPA), marital status, device frequently used for education, purpose of smartphone use, daily smartphone usage time, mobile learning time, and internet access method.

Attitude Scale Towards Mobile Learning

The Attitude Scale Towards Mobile Learning, developed by Demir and Akpınar in 2016 (24), is a 45-item scale that evaluates undergraduate students' attitudes towards mobile learning. The scale has four sub-dimensions: Satisfaction, Effect on Learning, Motivation, and Usability. Satisfaction evaluates students' Satisfaction towards mobile learning, while Effect on Learning evaluates the effect using mobile devices to study has on learning, Motivation evaluates students' motivation towards mobile learning, and Usability evaluates the usefulness of mobile devices. The lowest score that can be obtained from the 5-point Likert-type scale is 45, while the highest score is 225. It can be understood that the higher the score obtained from the scale, the higher the students' attitudes towards mobile learning. The Cronbach alpha reliability coefficient of the final version of the scale was calculated as 0.95 (24). In this study, Cronbach's alpha reliability coefficient was 0.978.

Time Management Questionnaire (TMQ)

The Time Management Questionnaire (TMQ) developed by Britton and Tesser in 1991 (25) was adapted into Turkish by Alay and Koçak in 2002 (26). The inventory comprises three sub-dimensions: Time Planning, Time Attitudes, and Time Wasters. The inventory, which is a 5-point Likert type, consists of 27 items in total. The 16th item in the Time Planning sub-dimension, the 2nd, 6th, and 7th items in the Time Attitudes sub-dimension, and all items in the Time Wasters sub-dimension are reverse scored. The sum of these three sub-dimensions provides the total score of the Time Management Questionnaire. The lowest possible score on the scale is 27, while the highest is 135 (26). Cronbach's alpha reliability coefficient was 0.80 in the Turkish adaptation of the scale and 0.806 in this study.

Procedures of the Study

The data were collected through the Student Introduction Form, Attitude Scale Towards Mobile Learning, and Time Management Questionnaire, using Google Forms to collect the data with first, second, third, and fourth-year nursing students. Students were informed about the study on the first page of the data collection forms. Before beginning the study, students were asked to whether they were willing to participate by

Table 3: Comparison of Attitude Scale Towards Mobile Learning and Time Management Questionnaire Scores according to characteristics (n=140)

Variables	n	Attitude Scale Towards Mobile Learning		Time Management Questionnaire	
		x̄±S.D	Median	x̄±S.D	Median
Age class					
≤19 (1)	36	149.64±38.06	152.5	85.42±14.42	84.5
20-21 (2)	60	164.07±31.70	167.5	89.40±10.27	90.0
≥22 (3)	44	163.70±43.35	170.0	91.50±12.36	91.5
Statistical analysis*		χ^2 =7.849		F=2.548 p=0.082	
Probability, Difference		**p=0.020 [1-2.3]**			
Gender					
Woman	105	162.06±34.00	164.0	89.56±12.66	92.0
Male	35	154.80±46.85	163.0	87.45±10.89	88.0
Statistical analysis, Probability		Z=-0.510 p=0.610		Z=-1.183 p=0.237	
Classroom					
1. (1)	42	140.21±41.89	151.5	86.64±13.94	86.0
2 (2)	27	165.37±27.13	164.0	87.44±11.56	89.0
3. (3)	36	176.36±29.01	180.0	88.56±11.22	91.5
4. (4)	35	173.74±37.71	174.0	93.63±10.73	92.0
Statistical analysis		χ^2 =23.391		F=2.421 p=0.069	
Probability, Difference		**p<0.001 [1-3.4]**			
CGPA					
2.00 - 2.99	23	151.52±49.04	166.0	92.09±15.16	94.0
3.00 - 4.00	117	161.96±34.89	164.0	88.44±11.56	89.0
Statistical analysis, Probability		Z=-0.636 p=0.525		t=1.311 p=0.192	
The deviceoften used in learning					
Smartphone (1)	61	156.36±39.43	163.0	85.49±11.53	85.0
Laptop (2)	59	160.92±38.99	168.0	92.39±12.56	94.0
Desktop computer (3)	16	166.94±22.57	167.0	87.38±9.98	88.5
Statistical analysis*		F=0.564		F=5.208	
Probability, Difference		p=0.570		**p=0.007 [1-2]**	
Intended use of smartphone					
Education	9	157.22±32.16	160.0	89.33±10.81	93.0
Establishing communication	109	159.82±38.76	166.0	89.57±12.65	91.0
Listening to music	19	161.05±36.38	160.0	85.84±10.87	85.0
Statistical analysis, Probability		χ^2 =0.685 p=0.710		χ^2 =2.132 p=0.344	
Everyday smartphone					
1-2 hours	15	167.67±43.29	168.0	94.73±8.61	94.0
3 hours	47	157.38±34.41	161.0	90.21±11.57	90.0
4 hours or more	78	160.53±38.53	164.5	87.23±12.90	88.5
Statistical analysis, Probability		χ^2 =1.216 p=0.545		**F=2.759 p=0.067**	
Mobile learning					
10-20 minutes	15	167.67±43.29	168.0	83.13±7.49	83.0
30 minutes	47	157.38±34.41	161.0	88.59±12.72	89.0
40 minutes and over	78	160.53±38.53	164.5	90.06±12.51	91.0
Statistical analysis, Probability		χ2 =1.216 p=0.545		**χ2 =2.132 p=0.344**	
Internet access					
Own mobile (1)	33	146.42±46.28	149.0	84.61±12.18	85.0
Own Wi-Fi (2)	50	169.38±34.51	175.5	88.58±12.21	89.0
Dormitory/home Wi-Fi (3)	57	160.23±32.43	160.0	92.00±11.65	93.0
Statistical analysis, Probability		χ^2 =1.216 p=0.545		**χ2 =2.132 p=0.344**	
Difference		**p=0.015 [1-2]**		**p=0.020 [1-3]**	

**For normally distributed data, the "Independent Sample-t" test (t-table value) was used to compare the measurement values of two independent groups; the "ANOVA" test (F-table value) statistics were used to compare three or more independent groups. For non-normally distributed data, "The Mann-Whitney U" test (Z-table value) was used to compare the measurement values of two independent groups; "Kruskall-Wallis H" test (χ2-table value) statistics were used to compare three or more independent grou*

Table 4. Correlation evaluation of Attitude Scale Towards Mobile Learning and Time Management Questionnaire scores of nursing students (n=140)

Correlation*		Time Management Questionnaire	Time Planning	Time Attitudes	Time Wasters
Attitude Scale Towards Mobile Learning	*r*	0.145	**0.253**	0.057	**-0.223**
	p	0.088	**0.003**	0.503	**0.008**
Satisfaction	*r*	0.105	**0.201**	0.040	**-0.174**
	p	0.215	**0.017**	0.637	**0.040**
Effect to Learning	*r*	**0.185**	**0.218**	0.069	-0.035
	p	**0.029**	**0.010**	0.421	0.679
Motivation	*r*	0.062	0.164	-0.006	**-0.211**
	p	0.469	0.053	0.945	**0.013**
Usability	*r*	0.086	0.159	0.018	**-0.177**
	p	0.312	0.061	0.831	**0.037**

**Spearman's correlation coefficient was used to examine the relationship between two quantitative variables that do not have a normal distribution.*

selecting the "I approve" option on the shared forms. Students answered the data collection questions in about 20 minutes.

Ethical Consideration

To conduct the study, permission from the institution and ethics committee was obtained from Maltepe University Ethics Commitee (Date and Number: 05.11.2021- 2021/30-07). For the Attitude Scale Towards Mobile Learning and Time Management Questionnaire used in the study, the necessary permissions were obtained from the relevant authors via e-mail. The data from the students who agreed to participate in the study were collected online by the researchers outside of the student's class hours and at times that would not affect their education. This study adhered to the Helsinki Declaration of Human Rights.

Statistical Analysis

Statistical analyses were performed using the SPSS (IBM SPSS Statistics 27) package program. Descriptive statistics were used to interpret the findings. Parametric tests were used for normally distributed data, while nonparametric tests were used for non-normally distributed data. In this context, the Independent Sample-t test (t-table value), the ANOVA test (F-table value), the Mann-Whitney U test (Z-table value), the Kruskal-Wallis H tests ($\chi 2$ -table value), and Spearman correlation analysis were used.

RESULTS

It was found that 42.96% of the nursing students were in the 20-21 age group with a mean age of 20.94±2.30 years. Additionally, 75% were female, 30% were in the first grade, 83.6% had a GPA between 3.00-4.00 points, and 96.4% were single. It was found that 43.6% of the students frequently used smartphones during their education, 77.9% used smartphones for communication purposes, 55.7% used smartphones for 4 hours or more per day, 70% had a mobile learning time of 40 minutes or more per day, and 40.7% accessed the internet via dormitory/home Wi-Fi (Table 1).

Nursing students' attitudes towards mobile learning and time management levels

The findings regarding the students' responses to the Attitude Scale Towards Mobile Learning and Time Management Questionnaire are presented in Table 2. The mean total score of this questionnaire was 160.24±37.58, with its sub-dimensions being 72.16±19.92 for Satisfaction, 43.39±10.67 for Effect to Learning, 24.71±7.19 for Motivation, and 16.98±7.47 for Usability. The mean total score of the Time Management Questionnaire was 89.04±12.24, with sub-dimensions of 51.49±11.09 in Time Planning, 23.76±3.76 in Time Attitudes, and 13.78±3.68 in Time Wasters (Table 2).

Comparison of nursing students' attitudes towards mobile learning and time management levels according to characteristics

After obtaining the results, the students' characteristics and mean scores on the Attitude Scale Towards Mobile Learning and Time Management Questionnaire were analyzed. According to age, it was found that the mean scores of the Attitude Scale Towards Mobile Learning of the students in the 20-21 and 22 age groups were statistically significantly higher than those who were 19 years of age. The mean scores of the students in the 3rd and 4th grades were statistically significantly higher than those in the 1st grade ($p<0.05$). It was found that the mean total score of the Time Management Questionnaire of students using laptops was statistically significantly higher than those using smartphones ($p<0.05$). The mean Attitude Scale Towards Mobile Learning score of the students who used their own Wi-Fi was statistically significantly higher than those with mobile data ($p<0.05$). The mean total score of the Time Management Questionnaire was statistically significantly higher in students who used dormitory/home Wi-Fi than in those who used their own Wi-Fi ($p<0.05$) (Table 3).

The relationship between nursing students' attitudes towards mobile learning and time management levels

There was a statistically significant positive correlation between the Attitude Scale Towards Mobile Learning, Effect to Learning sub-dimension mean scores, and Time

Management Questionnaire total (r=0.185; p=0.029) mean scores. A statistically significant positive correlation was also found between the Attitude Scale Towards Mobile Learning total (r=0.253; p=0.003), Satisfaction (r=0.201; p=0.017), and Effect to Learning (r=0.218; p=0.010) sub-dimension mean scores and Time Management Questionnaire Time Planning sub-dimension ($p<0.05$). A statistically significant negative correlation was found between the Attitude Scale Towards Mobile Learning total score and sub-dimension mean scores and the Time Management Questionnaire Time Wasters sub-dimension mean score ($p<0.05$) (Table 4).

DISCUSSION

After the COVID-19 pandemic, changes in the education and training system have also caused changes in attitudes towards mobile learning, which is significant regarding time management. In light of this, the present study was conducted to determine the effect of nursing students' attitudes towards mobile learning as it relates to time management.

The nursing students have stated that their attitudes towards mobile learning are high, based on the results of the Attitude Scale Towards Mobile Learning. Similarly, Demir and Akpınar (2016) found that students in the department of computer education and instructional technologies had high attitudes towards mobile learning (24). This finding is expected because digital systems are an integral part of daily life, as aside from the advantages that mobile learning provides. In addition, the study observed that the sub-dimension of Satisfaction was higher for the nursing students than the other sub-dimensions. Similarly, a study conducted by Hacıhasanoğlu et al. (2010) determined that the Satisfaction sub-dimension was higher than the other sub-dimensions for undergraduate students (27). Because of today's technology, it can be stated that education has become innovative and accessible regardless of time and place, especially due to mobile devices. Such devices also increase the satisfaction of nursing students as it relates to mobile learning. On the other hand, it was determined that the Usability sub-dimension was lower than the other sub-dimensions for the students who participated in the study. Similarly, the study of Karakaş and Saka (2021) also found that the Usability sub-dimension was lower than the other factors (28). The low Usability sub-dimension may be associated with the continuous development of technology and the time it takes for nursing students to adapt to each new development.

The total score obtained from the Time Management Questionnaire indicates that the students' time management levels are high; in other words, they manage their time well. This is similar to the studies conducted by Kaya et al. (2012) and Bıçkıcı and Torun (2021) (18, 29). Nursing students must realize the importance of time and acquire time management skills during their student life (30). In addition, the study's findings indicated that the Time Planning sub-dimension of the Time Management Questionnaire was higher than the other dimensions. Time Planning is defined as determining the activities necessary to achieve specific goals and planning how much time, with which tools, and when these activities will be carried out. This sub-dimension focuses on time management's short- and long-term planning (31). Similarly, a study conducted by Yılmaz and Temiz (2023) found that the Time Planning sub-dimension was higher than the other sub-dimensions for their participants (32). This finding indicates that nursing students possess excellent time planning skills. On the other hand, it was determined that the Time Wasters sub-dimension was lower than the other sub-dimensions. Time Wasters are habits that cause loss of time and prevent effective use of time. The Time Wasters sub-dimension includes items related to activities that negatively take up time (31). These would include everything that distracts nursing students from their university/faculty goals. For this reason, it is essential to teach students about potential time wasters, and to support the students in removing such hazards from their lives.

The findings also determined that the attitude of nursing students towards mobile learning changes according to individual characteristics. Students in the 20-21 and 22 age groups were shown to possess higher attitudes towards mobile learning. Thus, the study found that as the students got older, their attitudes towards mobile learning also increased. It can be thus stated that maturation is a prerequisite for learning (33).

The age groups in question correspond to students in the 3rd and 4th grades. This finding emphasizes that attitudes towards mobile learning differ according to grade level, and as nursing students' begin new grade levels, their attitudes towards mobile learning also increase. This notion also supports the finding that attitudes towards mobile learning increase with age.

Students who used laptops were found to manage their time better. Time management consists of analyzing time use, defining time problems, self-definition, setting objectives and priorities, transferring program goals to implementation plans, preparing daily plans and schedules, developing time management techniques, and analyzing and re-monitoring the process (18, 19). Laptops, much like other technological tools, can be useful in bettering people's lives if they understand how to use beneficial tools (15, 32, 34). This shows that nursing students who spend most of their time in front of the computer develop time management skills.

It was also determined that students who used their own Wi-Fi had better attitudes towards mobile learning. Students' attitudes towards mobile learning increased when they were able to attend classes from anywhere and at any time via Wi-Fi. A high student attitude is critical to promoting lasting learning (15, 35). This finding corroborates those of relevant studies in the literature (18, 19). Those who used dormitory/home Wi-Fi were found to have higher time management levels. This finding reveals that nursing students who have continuous and easy internet access are more aware of how to manage their time.

A significant positive relationship was found between the Attitude Scale Towards Mobile Learning, its Effect on Learning

sub-dimension, and the Time Management Questionnaire total score. This finding emphasizes that as mobile learning increases in students, time management also increases. When the items belonging to the Effect to Learning sub-dimension are examined, it can be seen that individuals believe that they can perform comfortable and efficient learning through mobile technologies in many aspects (access from anywhere, social interaction, ease of content follow-up, etc.) (24, 33). The Time Management Questionnaire was used to determine the time management skills of nursing students who participated in this study. This finding can be considered promising for the future training of competent nurses. Along with increases in the Attitude Scale Towards Mobile Learning total, Satisfaction, and Effect to Learning sub-dimension, there are also increases in the Time Planning sub-dimension of the Time Management Questionnaire. The 20 items under the Satisfaction sub-dimension represent student satisfaction with mobile learning. There are 11 items that examine the effect of mobile learning on learning in the Effect to Learning sub-dimension (24).

The Time Planning subscale of the Time Management Questionnaire represents long-term and short-term (one-day or weekly) planning and emphasizes that students use their time better (36). This study found that the mobile technologies which have become a staple of our time, have had a positive impact on the effect, attitude, and satisfaction of nursing students toward learning.

The Time Wasters sub-dimension scores were found to decrease as the Attitude Scale Towards Mobile Learning total, Satisfaction, Motivation, and Usability sub-dimension scores increase. A study by Alay and Koçak (2003) revealed that university students who manage their time better and avoid time-wasting activities can succeed more academically (31). Considering these findings, it was suggested that students with high mobile learning attitudes manage time better and avoid time wasters, and, in this context, they may be more successful in academic life.

CONCLUSION

This study determined that nursing students possessed positive attitudes towards mobile learning and maintained high time management levels. It also revealed that individual characteristics influenced students' attitudes toward mobile learning and time management. Increasing students' awareness of mobile learning methods is thus necessary to maintain such positive results. Planning the sections that direct the individual to use time effectively in mobile learning activities will allow students to increase their sensitivity to this issue. At the same time, considering the adverse effects of time wasters on people's psychosocial health, it may be recommended to conduct future studies that reveal the relationship between time management and mental problems.

Ethics Committee Approval: This study was approved by Maltepe University Ethics Committee (Date and Number: 05.11.2021- 2021/30-07).

Informed Consent: Written consent was obtained from the participants.

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