Genel Sağlık Bilimleri Dergisi
Journal of General Health Sciences (JGEHES)
DOI: https://doi.org/10.51123/jgehes.2021.24

Cilt: 3 Sayı:2 Yıl: 2021 | Araştırma Makalesi / Research Article | E-ISSN: 2687-5403

The Attitude of Nursing Students Towards Mobile Learning

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Article Info

Article History
Received: 26.03.2021
Accepted: 13.07.2021
Published: 25.08.2021

Keywords:
Nursing Students, Mobile Learning, Attitude.

ABSTRACT

Purpose: This study was conducted to determine the attitudes of nursing students towards mobile learning.
Method: This descriptive study was conducted with 369 students studying at the nursing department of a university who voluntarily accepted to participate in the study. Personal Information Form and "Attitude Scale Towards Mobile Learning" were used to collect the data. Ethics committee permission, institution permit and students informed consents were obtained for the implementation of the research. Data was analyzed in IBMM SPSS Statistics 22 program. In data analysis, percentage, frequency, and Independent Sample t-test, Kruskal-Wallis H, One-Way ANOVA, and Mann-Whitney U Tests were used.
Results: All students used cellphone/smartphone. More than half of them (64.0%) thought mobile learning was useful for both theoretical and practical lessons. Most of the students (88.6%) were found to use mobile devices for research purpose. Attitudes of the students towards mobile learning were determined at the moderately positive level (Total score:160.15±23.79). It was found that those who think that mobile learning is not useful in their lessons have a statistically significant lower total score and the satisfaction sub-dimension score than others (p: 0.000; p: 0.000).
Conclusions and Suggestions: Students' widely usage of mobile devices especially smartphones, their enthusiasm to benefit from them and positive attitudes towards mobile learnings indicate mobile devices can be used in nursing education. In this context, it is recommended that related research about mobile device usage in nursing education must be increased and studies which research students' experiences in this field must be conducted.

Hemşirelik Öğrencilerinin Mobil Öğrenmeye Yönelik Tutumu

Makale Bilgileri

Makale Geçmişi
Geliş: 26.03.2021
Kabul: 13.07.2021
Yayın: 25.08.2021

Anahtar Kelimeler:
Hemşirelik Öğrencisi, Mobil Öğrenme, Tutum.

ÖZ

Amaç: Bu araştırma hemşirelik öğrencilerinde mobil öğrenmeye yönelik tutumu belirlemek amacıyla gerçekleştirildi.
Yöntem: Tanımlayıcı araştırma olarak yapılan bu çalışma bir üniversitenin hemşirelik bölümünde eğitim gören araştırmaya katılmayı gönüllü kabul eden 369 öğrenci ile gerçekleştirildi. Verilerin toplanmasında kişisel bilgiler formu ve "Mobil Öğrenmeye Yönelik Tutum Ölçeği" kullanıldı. Araştırmanın uygulanabilmesi için etik kurul izni, kurum izni ve öğrencilerin aydınlatılmış onamları alındı. Veriler IBMM SPSS Statistics 22 programında değerlendirildi. Verilerin değerlendirilmesinde yüzde, frekans, Independent Sample t-test, Kruskal-Wallis H, One-Way ANOVA, and Mann-Whitney U Tests kullanıldı.
Bulgular: Öğrencilerin tamamı cep telefonu/akıllı telefon kullanmaktadır. Öğrencilerin yarıdan fazlası (%64.0) mobil öğrenmenin hem teorik hem de pratik dersler için yararlı olduğunu düşünmektedir. Öğrencilerin çoğunluğu (%88.6) mobil cihazları araştırma amacıyla kullandığı saptandı. Öğrencilerin mobil öğrenmeye yönelik tutumları orta düzeyde olumlu düzeyde belirlendi(Toplam Puanı:160.15 ±23.79). Mobil öğrenmenin derslerinde yararlı olmadığını düşünenlerin mobil öğrenmeye yönelik tutum ölçeği toplam puanının ve memnuniyet alt boyut puanının diğerlerinden istatistiksel olarak anlamlı düzeyde daha düşük olduğu saptandı (p:0.000; p:0.000).
Sonuç ve Öneriler: Öğrencilerin mobil cihazları, özellikle akıllı telefonları yaygın olarak kullanmaları, bunlardan faydalanma istekleri ve mobil öğrenmeye yönelik olumlu tutumları, mobil cihazların hemşirelik eğitiminde kullanılabileceğini göstermektedir. Bu bağlamda, hemşirelik eğitiminde mobil cihaz kullanımı ile ilgili araştırmaların artırılması ve öğrencilerin bu alandaki deneyimlerini araştıran çalışmaların yapılması önerilmektedir.

Atıf/Citation: Aktaş, D., Yazıcı, G., Koçaşlı, S. & Yılmaz, K. (2021). The attitude of nursing students towards mobile learning. *Genel Sağlık Bilimleri Dergisi, 3*(2), 133-142.

INTRODUCTION

Mobile learning defines as flexible learning occures through mobile devices that we carry daily such as smartphone and tablet and can be shaped according to the needs of learners (Sırakaya & Sırakaya Alsancak, 2017). Importance of mobile device in our lives has raised with developing technology aiming at easing our access to information (Ağca & Bağcı, 2013). Usage of a mobile device as a learning tool can increase students' motivation and their academic success, form a positive attitudes towards lesson, and ensure their control on learning process (Erdoğdu & Şahin, 2016; Koohestani et al., 2019; Li et al., 2018; Sönmez & Çapuk, 2019). Furthermore, students apprise mobile learning as innovative and entertaining (Ağca & Bağcı, 2013).

The use of mobile devices in health education is increasing (Klímová, 2018). Mobile devices allow students to access easily to evidence-based studies, guidelines, drug guidelines, e-books, and applications which develop their clinical practice and experience, increase students' knowledge and skill levels and improve learning outcomes (Klímová, 2018; Li et al., 2018; Şahin & Başak, 2017). In the meta-analysis conducted by Kim and Park (2019), it was concluded that smartphone-based mobile learning in nursing education was effective in improving students' attitudes towards learning and had a positive effect on knowledge, skills, and confidence in learning. In a study assessing nursing students' experience of using PDA (Personal Digital Assistant) in clinical practice, it was observed that more than half of the students stated that using PDA facilitated using drug applications and notes writing as well as saving their time in clinical applications (Johansson et al., 2012). Also, in the study carried out by Kim et al. (2017), it was concluded that the education given to students by mobile application increased the application skill.

Being aware of new trends which can affect nursing education and researching a way to benefit positively from them are very important (Şahin & Başak, 2017). However, the spread of mobile learning environment depends on people's adaption and acceptation of technology (Menzi et al., 2012). Determining the attitudes of students towards learning through mobile devices is important for the success of mobile learning implementation (Demir & Akpınar, 2016). In this way, an efficient learning environment can be designed according to learners' perception and needs (Elçiçek & Bahçeci, 2015). So, this study was carried out to determine nursing students' attitudes towards mobile learning.

METHOD

Research Design

This research was conducted as a descriptive study to determine nursing students' attitudes towards mobile learning

Research Sample

All students registered in nursing bachelor program (n:544) were invited to participate in this study. 369 students who voluntarily accepted to participate in the study were included in the study.

Research Instruments and Processes

Personal Information Form: This form consists of eight questions including items such as students' age, gender, mobile device type, daily internet usage time, and mobile usage purpose.

Attitude Scale Towards Mobile Learning (ASTML): The Attitude Scale Towards Mobile Learning (ASTML) was developed by Demir and Akpınar in 2016 to measure the attitudes of undergraduate students towards mobile learning. ASTML consists of 45 items with 4 dimensions

(Satisfaction, Impact on Learning, Motivation, and Usefulness) (Cronbach's Alfa: 0.95). The items of the scale are in five-point likert type and are graded as completely agree (5), agree (4), partially agree (3), disagree (2), completely disagree (1). Total score can be calculated by collecting all item scores. The scores of 5., 27., 28., 30., 32., 36., 40. items in the scale are calculated by reversing. A person with a positive attitude can get at most 225 scores from this scale. The lowest score which can be got from this scale was determined as 45 (Demir & Akpınar, 2016). In this study, the Cronbach's Alpha was determined as 0.947.

Data collection forms were administered face to face at the end of an appropriate lesson according to the curriculum of the students. Collecting data took approximately 20 minutes for each classroom.

Data Analysis

Data was analyzed by IBMM SPSS Statistics 22 program. In data analysis, percentage, frequency, and mean were used along with Independent Sample t-test, Kruskal-Wallis H, One-Way ANOVA, and Mann-Whitney U Tests. Findings were evaluated at 95.0% confidence interval and the statistical significance was considered at $p < 0.05$.

Ethic

Ethical committee permission (Date-Decision Number:23.03.2018-74) from University Ethical Committee and official permission from the institution were got to conduct this research. Before collecting data, the aims of the study and the method of completing the scales were explained to the students and written consents and verbal permissions were taken as well.

RESULTS

Among the nursing students paticipated in this study, 87.8% were female and 30.6% were in 3rd class. According to their statements, it was determined that all of them (100%) used mobile phones/smartphones, 44.7% used internet for 4 to 6 hours daily, 88.6% used mobile devices for research purposes, and 64.0% thought that mobile learning was useful in both theoretical and practical lessons (Table 1).

Table 1. *Descriptive Characteristics of Students (n:369)*

Descriptive Characteristics	N	%
Gender		
Female	324	87.8
Male	45	12.2
Class		
1. Class	88	23.8
2. Class	97	26.3
3. Class	113	30.6
4. Class	71	19.3
Mobile devices owned by students		
Cellphone/ Smartphone	369	100
Tablet	106	28.7
Netbook	9	2.4
Notebook	74	20.1
Average ınternet usage time		
0-3 hours	141	38.2
4-6 hours	165	44.7
7-9 hours	49	13.3
10 hours and more	14	3.8

Purpose of using mobile devices		
Research	327	88.6
Chat-instant messaging	313	84.8
Watching online videos	308	83.5
Social networks	281	76.2
SMS	272	73.7
File Download (music, video, software, etc.)	266	72.1
Email	263	71.3
Follow the news	214	58.0
Shopping	205	55.6
Banking	157	42.5
File transfer	154	41.7
Playing online games	104	28.2
E-learning	82	22.2
E-book download- reading	50	13.6
Audio-book download-listening	23	6.2
Podcast	11	3.0
Thinking that mobile learning is useful in lessons		
Useful in theoretical lessons	92	24.9
Useful in practical lessons	18	4.9
Useful in both theoretical and practical lessons	236	64.0
Not useful	23	6.2

Students ASTML mean score was found to be 160.15 ± 23.79. Among the subscales of ASTML, the mean score of "satisfaction", "impact on learning" "motivation" and "usefulness" subscales were 70.15 ± 14.60, 44.14 ± 6.33, 24.80 ± 5.54 and 21.04 ± 4.76 respectively (Table 2).

Table 2. *ASTML Scores of Students*

ASTML	Mean ($\bar{X}$)	Standart Deviation(S.D)	Minumum (Min.)	Maksimum (Max.)
Total Score	160.15	23.79	101.00	224.00
Satisfaction	70.15	14.60	29.00	100.00
Impact on Learning	44.14	6.33	24.00	55.00
Motivation	24.80	5.54	11.00	35.00
Usefulness	21.04	4.76	7.00	35.00

Comparing the students score based on the gender, it was determined that there were statistically significant differences in total scores and satisfaction subscale scores (Z=-2.478; p=0.013, t=-3.369; p=0.001). Men's ASTML total score and satisfaction subscale scores were found to be significantly higher than females (Table 3).

Comparing the students score based on the different class, it was determined that there were statistically significant differences in motivation and usefulness subscale scores ($\chi 2$=20.402; p=0.000, $\chi 2$=8.081; p=0.044). Our result showed that the 1st class motivation scores were found to be statistically significantly higher than 3rd class student and 3rd class student usefulness scores were found to be statistically significantly higher than 1, 2, and 4 class students (Table 3).

Statistically significant differences were found between the state of considering whether mobile learning is useful in the lessons and the ASTML total score (F=17.679; p=0.000), satisfaction scores (F=18.907; p=0.000), learning effect scores ($\chi 2$=15.054; p=0.002) and motivation scores ($\chi 2$=21.702; p=0.000) (Table 3). It was determined that ASTML total scores of those who thought that mobile learning was not useful in their lessons were significantly lower than others. Likewise, it was found that ASTML total scores of those who thought that they were only useful in theoretical lessons were statistically significantly lower than those who thought mobile learning was useful in both theoretical and practical lessons (Table 3).

It was determined that satisfaction score of those who thought that mobile learning was not useful

in their lessons were significantly lower than others. At the same time, it was determined that the score of the effect of learning in students who thought that mobile learning was not useful in their lessons were statistically significantly lower than those who thought mobile learning was useful in both theoretical and practical lessons (Table 3).

It was determined that motivation subscale score of those who thought that mobile learning was not useful in their lessons were significantly lower than those who thought mobile learning was useful in only practical lessons and those who thought mobile learning was useful both in theoretical and practical lessons. Likewise, It was determined that motivation subscale score of those who thought that mobile learning was useful in only practical lessons were significantly lower than those who thought mobile learning was useful in both theoretical and practical lessons (Table 3).

Comparing the students score based on the average internet use status, it was determined that there were statistically significant differences in satisfaction and effect on learning subscale scores ($\chi2=8.475$; $p=0.000$, $\chi2=11.235$; $p=0.011$). The satisfaction subscale score of the internet users with an average of 10 hours and above were found to be statistically significantly higher than those using internet for 4-6 hours and 3 hours or less. At the same time, the effect of learning subscale scores of the internet users with an avarege 7-9 hours were found to be statistically significantly higher than those using internet for 4-6 hours and 3 hours or less (Table 3).

Table 3. *Comparing the Descriptive Characteristics of Students with Attitude Scale Towards Mobile Learning Scores*

Descriptive Characteristics	N	ASTML									
		Satisfaction		İmpact on Learning		Motivation		Usefulness		Total Score	
		X̄±S.D.	M [IQR]	X̄±S.D.	M [IQR]	X̄±S.D.	M [IQR]	X̄±S.D.	M [IQR]	X̄±S.D.	M [IQR]
Gender											
Female	324	69.22±14.69	68.0 [19.0]	44.00±6.41	43.0 [9.0]	24.68±5.67	25.0 [7.0]	21.13±4.59	21.0 [6.0]	159.03±24.17	159.0 [32.0]
Male	45	76.93±12.08	75.0 [16.5]	45.20±5.74	44.0 [9.0]	25.73±4.50	26.0 [6.5]	20.40±5.93	22.0 [9.0]	168.27±19.21	163.0 [23.0]
		t=-3,369		Z=-1.186		Z=-1.398		Z=-0.275		Z=-2.478	
		p=0.001		p=0.236		p=0.162		p=0.783		**p=0.013**	
Class											
1.class	88	70.84±14.61	71.0 [18.0]	44.73±6.19	44.0 [9.0]	25.84±5.44	26.0 [6.8]	20.39±5.22	21.0 [7.0]	161.80±23.63	163.0 [24.8]
2.class	97	69.22±15.59	67.0 [19.5]	43.53±6.28	43.0 [9.0]	24.41±5.59	25.0 [7.0]	20.07±4.61	21.0 [5.0]	157.23±24.47	155.0 [32.5]
3.class	113	69.28±13.40	70.0 [18.0]	44.20±6.28	43.0 [10.0]	24.03±5.47	24.0 [8.0]	22.68±4.06	22.0 [4.0]	160.19±23.64	161.0 [28.5]
4.class	71	71.99±15.11	73.0 [20.0]	44.20±6.75	44.0 [9.0]	25.31±5.59	25.0 [6.0]	20.58±4.88	21.0 [6.0]	162.07±23.40	164.0 [35.0]
		F=0.703		χ^2=1.634		χ^2=8.081		χ^2=20.402		F=0.781	
		p=0.551		p=0.652		**p=0.044**		**p=0.000**		p=0.505	
						[1-3]		**[1,2,4-3]**			
Thinking that mobile learning is useful in lessons											
Theoretical lessons (1)	92	67.43±12.48	66.0 [15.5]	43.62±6.23	43.0 [8.8]	23.59±5.17	23.0 [6.8]	20.80±4.43	21.5 [5.8]	155.45±19.24	155.0 [24.0]
Practical Lessons (2)	18	68.22±14.51	66.5 [21.8]	41.61±6.03	42.0 [9.0]	25.11±5.45	25.0 [5.5]	21.11±4.48	22.5 [9.3]	156.06±23.19	158.5 [31.0]
Theoretical and practical lessons(3)	236	73.15±14.12	73.0 [18.8]	44.92±6.17	44.0 [9.0]	26.65±5.39	25.5 [7.5]	21.34±4.96	21.5 [5.0]	165.06±23.60	164.0 [30.5]
Not useful (4)	23	51.87±12.24	48.0 [20.0]	40.35±6.98	40.0 [9.0]	20.78±6.29	21.0 [11.0]	18.87±3.83	19.0 [5.0]	131.87±19.24	126.0 [24.0]
		F=18.907		χ^2=15.054		χ^2=21.702		χ^2=7.816		F=17.679	
		p=0.000		**p=0.002**		**p=0.000**		p=0.050		**p=0.000**	
		[1,2,3-4] [1-3]		**[3-4]**		**[1-3] [2,3-4]**				**[1,2,3-4] [1-3]**	
Average internet usage time											
0-3 hours	141	69.01±14.90	67.0 [18.5]	43.48±6.34	43.0 [9.0]	24.71±5.83	24.0 [8.0]	21.18±4.45	21.0 [5.0]	158.38±24.96	157.0 [33.0]
4-6 hours	165	69.53±14.89	70.0 [18.5]	43.94±6.14	43.0 [7.0]	24.42±5.35	25.0 [7.0]	21.48±4.55	22.0 [6.5]	159.38±23.92	161.0 [31.0]
7-9 hours	49	73.31±12.35	72.0 [17.5]	45.96±6.68	46.0 [8.5]	25.45±4.99	25.0 [7.0]	20.08±5.48	21.0 [7.0]	164.80±19.78	163.0 [29.0]
10 hours and more	14	78.07±13.38	81.0 [20.5]	44.07±6.11	44.5 [9.5]	28.07±6.04	28.5[11.8]	17.86±6.37	18.0[10.8]	171.07±19.99	172.5 [28.8]
		χ^2=8.475		χ^2=11.235		χ^2=6.041		χ^2=5.977		F=1.940	
		p=0.037		**p=0.011**		p=0.110		p=0.113		p=0.123	
		[1,2-4]		**[1,2-3]**							

*"Independent Sample-t" test (t-table value) statistics were used in comparison of measurement values of two independent groups in data with normal distribution. "ANOVA" test (F-table value) statistics were used to compare the three or more independent groups with the measurement values. In comparison with the measured values of two independent groups of data are not normally distributed "Man Whitney" test (Z-table value), in comparison with the measured values of three or more independent groups "Kruskal-Wallis H" test (χ^2-table value) were used.

DISCUSSION

This study was carried out to determine nursing students' attitudes towards mobile learning. Most of the students participating in the study are female. All students have at least one mobile device.

The internet has become an integral part of our lives along with technological development. According to data of the Turkish Statistical Institute (TUIK), the usage of the internet is increasing every day. The rate of internet usage in Turkey has increased from 66.8 % to 72.9% since 2017 to 2018 (Turkish Statistical Institute [TUIK], 2018). Turnbull et al. (2018) showed that 53.6% of students used internet for about 5 hours per day. Also, Geçer and İra (2015) stated that 17.3% of students used internet for 3 hours and 25.4% used it for 4 hours or more daily. Öksüz et al. (2018) showed that 28.3% of nursing students used internet for about 3-6 hours a day. In other study conducted with nursing students showed that 60.0% of them used internet 5 hours or more a day (Abdelgany et al., 2018). In our study, it was concluded that nursing students used the internet between 4 and 10 hours. Considering that all students have smart phones in our study, it is thought that the internet was available 24 hours a day with smart phones.

Today, mobile devices are used for many purposes. In the study of Aguilera-Manrique et al. (2018), 91.8% of the nursing students stated that they used smartphones for whatshapp, 60.9% for social networking, and 43.1% for internet searches. In the study conducted by Koç et al. (2018) with nursing students, it was stated that 95.24% of students used smart devices for communication and chat, 51.43% for research and homework, 60.95% for listening and watching music or movies. Braımlları and Sala (2017) found out that 84.5% of university students use internet for social media, 42.0 % for updating information, 45.0% for e-mail, and 43.5% for online shopping daily. In addition, it was found that 88.0% of the students stated that the internet improved their studies, and 75.8% of them said that it helped them to access to detailed information on different subjects through videos and online education. In this study, it was seen that 88.6 % of the students used mobile devices for researching, 84.8% for instant messaging, and 83.5% for watching video. These findings indicate that students use mobile devices actively for both social and school life.

Since mobile learning contributes to gaining and developing knowledge and skills and promoting constructivist learning, mobile devices are expected to affect nursing education positively (Guo et al., 2015; Klímová, 2018; Zayim & Özel, 2015). Therefore, mobile technology has been used in nursing education as an additional tool without any time and space limitation to improve students' clinical practice and experience in many cases (Guo et al., 2015; Patil et al., 2016). The literature indicated that educations with mobile devices affect learning new medical procedures, gaining new skills, increasing knowledge level (Davis et al., 2012; Fernández-Lao et al., 2016; De Sena et al., 2013; Yoo & Lee, 2015). In the study of Patil et al. (2016) with medical students, 72.0% of the students stated that they think that mobile learning provides efficiency in learning. Besides, in the study of Zayim and Özel (2015), 67.0% of nursing students stated that they are ready for education with mobile learning across the country. Another similare study conducted by O'Connor and Andrews in 2018 to evaluate the use of mobile phones and mobile applicaton in clinical nursing education. Their result showed that 62.0% of the students considered mobile applications a useful learning tool, 63.0% of them stated that it improved their nursing knowledge, 56.0% of them said that it improve their confidence in clinical practice, and 56.0% stated that it improved their clinical decision making (O'Connor & Andrews, 2018). Similarly, most of the student (64.0%) in our study thought that mobile learning was useful for both theoretical and practical lessons.

Students enthusiasm to use mobile learning in their lessons has a positive effect on using a mobile device or mobile application as an education tool (Briz-Ponce et al., 2016). Additionally, students' positive attitudes and perceptions of mobile learning can benefits students which potentially improve their clinical competence, self-confidence, and theoretical knowledge (Koohestani et al., 2018). However, the adoption of mobile learning is crucial for students and educators to accept or reject it (Hamidi & Chavoski, 2018). Nassuora (2013) stated that positive attitude toward mobile learning was very important in creating behavioral change for usage of mobile learning. In a study which was conducted on medicine students by Briz-Ponce et al. (2016), it was determined that students perceived mobile learning moderately positive and had a mid-level of enthusiasm to adopt it. Moreover, it

was stated that 57.0% of the students were quite enthusiastic to use mobile learning and 40.5% recommended it as well. In our study, students' attitude towards mobile learning can be considered as a moderate level (Mean Score: 160.15 + 23.79). Additionally, satisfaction, motivation, and effect on learning subscales scores of the students who thought that mobile learning was not useful in their classes were found to be significantly lower than others (respectively p:0.000, p:0.000, p:0.002). At the same time, motivation sub-dimension score of students who thought that mobile learning was useful for both theoretical and practical lessons was found to be significantly higher than the score of those who thought it was only useful in theoretical lessons. So, it can be concluded that mobile learning method can be used in nursing education.

CONCLUSION AND RECOMMENDATIONS

Result showed that all nursing students used cell phone or smartphone. Most of the students thought that mobile learning can be useful for both theoretical and practical lessons. Additionally, students were found to have a mid-level positive attitude towards mobile learning. Students' usage of the mobile device especially smartphones and their enthusiasm to benefit from them and having a positive attitude toward mobile learning indicated that mobile devices can be useful in nursing education.

Increasing the quality of nursing education is very important in the development of the nursing profession. Therefore, it is necessary to follow the innovations for the education of students and to apply them correctly. The use of mobile devices and the internet, which have become a part of daily life, will be a step in increasing the success of students. In this context, it is recommended that increase studies on the use of mobile devices in nursing education, conduct studies that include the examination of students 'mobile learning experiences, and organize training programs that will increase students' awareness on this issue.

Funding Sources

No financial support was received in the study

Conflict of Interest

The authors declare that are no conflict of interests.

Author Contributions

Design: D.A., G.Y.; Data collection or processing: D.A., G.Y., S.K.; Analysis or interpretation: K.Y., D.A., G.Y., S.K.; Literature search: K.Y., D.A., S.K.; Writing: K.Y., D.A., S.K.

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