Effect of Artificial Intelligence Using Mobile-Based Nursing Education on Sexual Health among Women Receiving Medications for Hepatitis C

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Abstract

Background: Hepatitis C infection affects women's quality of life, requiring new treatments like direct-acting antiviral drugs. Promoting sexual health is an important function of nurses. **Aim:** To assess effect of artificial intelligence using mobile-based nursing education on sexual health among women receiving medications for hepatitis C. **Design**: A quasi-experimental design was used to conduct the research. **Setting:** The National Liver Institute's outpatient clinic at Menoufia University in Egypt. **Sample:** 150 women with a history of hepatitis C virus infection were chosen as a purposive sample. **Tools**: The general characteristic of the women under study and their level of sexual health knowledge were two of the instruments utilized to gather data. The female sexual function index is associated with Tool II. **Results:** The study group demonstrated a significant improvement in all dimensions of the female sexual function index and sexual health awareness ($p \leq 0.001$). Conversely, there were no discernible changes in the control group's knowledge of sexual health or female sexual function index scores ($p > 0.05$). **Conclusion:** After undergoing HCV medication in conjunction with artificial intelligence through mobile-based education, the women in the study group showed a notable improvement in every FSFI domain and their overall knowledge of sexual health and strategies for improving it when compared to those in the control group. **Recommendation:** Integrate mobile-based artificial intelligence into the standard care plan for women receiving HCV medications, focusing on improving sexual health awareness and addressing misconceptions.

Keywords: Hepatitis C Medications, Sexual Health, Artificial Intelligence, Mobile-Based Nursing Education

Introduction

The hepatitis C virus (HCV) remains a major global public health concern, especially for susceptible groups like women **(WHO, 2022)**. The frequently silent progression of HCV, which can result in chronic liver diseases including cirrhosis and hepatocellular cancer, adds to the burden of the virus **(Smith et al., 2021)**. Since the development of direct-acting antiviral (DAA) drugs, HCV treatment has undergone significant change, and in most cases, the virus can now be cured **(Johnson & Brown, 2020)**. However, pharmacologic intervention alone is not enough to achieve the best results from DAA treatment; complete education, awareness, and behavioral change are also necessary, particularly about sexual health, which is still not sufficiently addressed in this context (**Lee, Lim, & Kim, 2021)**.

The biological, social, and cultural obstacles that women with HCV face make managing the illness and providing health education more difficult **(Ahmed et al., 2019)**. Despite its vital role in HCV transmission and general well-being, sexual health is commonly disregarded or demonized. Many women don't know enough about how HCV spreads through sexual contact, how to avoid getting infected, and how the virus impacts reproductive health **(Chen, Smith, & Zhang, 2022)**. To overcome stigma and false information, as well as to enable women to embrace safe sexual practices both during and after DAA therapy, targeted education is crucial **(Foster et al., 2020).**

In contexts with limited resources or among individuals with low health literacy, traditional health education approaches frequently fall short in engaging women **(Gonzalez et al., 2018)**. Because of its accessibility, adaptability, and privacy potential, mobile health (mHealth) interventions have become viable substitutes **(Jones, Green, & White, 2021)**. By providing a scalable platform to support sexual and reproductive health, mobile-based education can assist in overcoming social, temporal, and geographic barriers **(Williams & Park, 2020).**

By making it possible to deliver individualized, interactive, and adaptable educational information, artificial intelligence (AI) further expands the potential of mHealth **(Rahman et al., 2021)**. Mobile apps with AI capabilities can improve user experience and knowledge acquisition by providing decision-support tools, tracking engagement, and customizing messages according to user profiles **(Zhang et al., 2022)**. These technologies can help women receiving DAA therapy better comprehend and remember sexual health information **(Liu et al., 2021)**.

However, there is still a dearth of empirical study on the effectiveness of AI-integrated mobile education in enhancing sexual health practices and

understanding among women with HCV, despite the technology's potential. Most current initiatives focus on generic HCV knowledge and treatment adherence, frequently ignoring gender-specific requirements and sexual health issues **(Martinez et al., 2020)**. This disparity emphasizes the need for creative teaching strategies that enable women to make knowledgeable decisions about their health in the face of chronic illness.

Enhancing quality of life, lowering transmission, and promoting the long-term effectiveness of antiviral therapy all depend on raising sexual health literacy among women with HCV **(Kumar et al., 2019)**. An AI-powered mobile education approach could dispel long-standing myths, lessen stigma, and promote candid discussions on sexual and reproductive health **(Nguyen et al., 2021)**. Women are more likely to embrace healthy habits and effectively advocate for their own well-being when they have access to reliable and easily comprehensible information **(Ali & Hassan, 2020).**

The purpose of this study is to evaluate how well an AI-based mobile educational intervention affects the sexual health habits and knowledge of women undergoing DAA medication for HCV. The intervention aims to close knowledge gaps, encourage behavior change, and improve sexual health outcomes by combining cutting-edge technology with material that is supported by evidence. It also investigates the clinical acceptability and viability of the intervention. By offering insights into how AI might be strategically applied to help education and self-management in the care of chronic diseases, this research advances the rapidly developing field of digital health. It draws attention to how AI-powered solutions can be used to address delicate and complicated topics, such sexual health, among underserved female groups impacted by HCV **(Taylor et al., 2023)**.

Study Significance

An estimated 71 million people worldwide are afflicted with hepatitis C virus, which is still a major cause of chronic liver disease (**European Union HCV Collaborators, 2017)**. Particularly in Egypt, the prevalence of HCV is among the highest in the world. Nearly 10% of Egyptians and 7% of those aged 15 to 19 who tested positive for HCV had active viremia, according to a 2015 demographic and health survey. This amounts to approximately 5.5 million people who have a chronic infection **(Imam et al., 2020).**

Through the implementation of bold national programs in recent years, such as the Hepatitis C Elimination and Early Non-Communicable Disease Detection Presidential Initiative, Egypt has greatly increased access to direct-acting antiviral drugs and enhanced treatment results nationwide. However, significant psychosocial aspects of treatment, such sexual health, particularly for women, are

still not sufficiently addressed despite these medical advancements **(Saker et al., 2019).**

In Egypt, honest communication about sexual health is frequently impeded by cultural and traditional barriers, especially for women and in clinical settings where female healthcare providers are involved **(Saker, 2019)**. As a result, little is known about female sexual dysfunction, particularly in women receiving therapy for HCV. This topic is a neglected but important area of concern in Egyptian healthcare research because, so few studies have addressed it **(Saker et al., 2019)**.

Enhancing long-term treatment outcomes, improving quality of life, and reducing transmission rates can all be achieved by educating women with HCV about sexual health issues. A mobile-based AI intervention can help dispel misunderstandings, reduce stigma and anxiety, and encourage open communication about sexual and reproductive health issues. Equipped with factual knowledge and practical solutions, women are more able to adopt healthy habits and advocate for their own well-being **(Saker, 2019)**.

In light of this, the study is significant because it aims to evaluate the impact of artificial intelligence through mobile-based education on female patients' sexual health when taking direct-acting antiviral medications for the hepatitis C virus. Additionally, it complements national efforts by addressing this important but frequently disregarded component of comprehensive patient intervention **(Tunçel et al., 2019)**.

The aim of the study The study's aim was to evaluate effect of artificial intelligence on the sexual health of women on direct-acting antiviral drugs for the hepatitis C virus through mobile-based nurse education.

Research Hypotheses:

H_1: Compared to those receiving standard care, women undergoing HCV medications in conjunction with artificial intelligence through mobile-based nursing education have noticeably higher female sexual function index scores.

H_2: There a statistically significant improvement in FSFI scores among women in the study group after artificial intelligence through mobile-based nursing education, compared to their pre-intervention scores.

H_3: Following artificial intelligence employing mobile-based nursing education, women in the study group noticeably more knowledge about sexual health and strategies for improving it than women in the control group.

Subjects and Method

Design: A quasi-experimental design was used in the investigation with two groups: study and control groups.

Setting: The research was conducted at the National Liver Institute's outpatient clinic at Menoufia University in Egypt.

Sample: 150 women with a history of Hepatitis C virus infection were chosen as a purposive sample. Participants were split evenly into two groups: 75 women made up the study group and 75 women in the control group.

- The study group consisted of women who got HCV medications in addition to regular outpatient care and additional nurse interventions, such as advice on safe sexual behavior, methods to increase psychological well-being, and steps to promote sexual health.
- The control group consisted of women who did not get any additional nurse interventions, merely regular outpatient care and DAA treatment.

Criteria for Inclusion

- Women without cirrhosis who have a persistent HCV infection
- Currently married and sexually active
- Undergoing treatment with medications

Criteria for Exclusion

- Postmenopausal females
- Unmarried women
- Patients are diagnosed with diabetes, ischemic heart disease, depression, or cirrhosis, as these conditions can negatively impact sexual function

Calculating Sample Size

- The Epi Info statistics program (Open-Source Statistics for Public Health) was used to determine the sample size, which was based on a 95% confidence level, 5% margin of error, and 80% power. and a 1:1 ratio between study and control groups.

Data Collection tools

Tool I: An organized questionnaire for interviews

Researchers created this tool, which had two sections and was based on pertinent literature (Ali & Hassan, 2020):

- **Section 1: Demographic Information**– Included age, educational level, occupation, and household income.
- **Section 2: Sexual Health Knowledge Assessment** – Included 11 questions covering sexual health definitions, importance, influencing and harmful factors, and ways to promote sexual health.

Scoring: Total scores were categorized as:

- Poor (<60%)
- Average (60–75%)
- Good (>75%)

Validity: Content validity was assessed by a panel of five experts (from obstetrics, maternal health, and internal medicine), who reviewed and refined the tool for relevance and clarity.

Reliability: Assessed via the **test-retest method**, with a high level of internal consistency is indicated by Cronbach's alpha of 0.861.

Tool II: Female Sexual Function Index (FSFI)

A validated instrument for evaluating women's sexual function across six key categories is the Female Sexual Function Index (FSFI), which was modified from Reed et al. (2014). A 5-point Likert scale is used to grade the tool's 19 items, with

domain-specific weightings to calculate both domain and total scores.

Scoring of FSFI Domains

Domain	Questions	Score Range	Factor	Minimum Score	Maximum Score
Desire	1–2	1–5	0.6	1.2	6.0
Arousal	3–6	0–5	0.3	0.0	6.0
Lubrication	7–10	0–5	0.3	0.0	6.0
Orgasm	11–13	0–5	0.4	0.0	6.0
Satisfaction	14–16	0 (or 1)–5	0.4	0.8	6.0
Pain	17–19	0–5	0.4	0.0	6.0

- **Total FSFI Score Range**: 2.0 to 36.0
- Better sexual function is indicated by a higher score (Weigl et al., 2005; Anis et al., 2011).

Tool Validity

A panel of five academic experts verified the content validity of the FSFI (Arabic version): two from the Department of Maternal & Newborn Health Nursing at Menoufia University's Faculty of Nursing, and three from the Department of Obstetrics & Gynecology, Faculty of Medicine. A number of changes were made to improve clarity, accuracy, and relevance in response to their input.

Tool Reliability

When the reliability of the FSFI was assessed using the test-retest method, Cronbach's alpha coefficient was 0.82, which indicates strong internal consistency. The tool's consistency across many parameters of sexual function was further confirmed by domain-specific reliability coefficients, which ranged from 0.79 to 0.86 (Saker, 2019).

Administrative Procedures

The Dean of the Faculty of Nursing obtained formal administrative approval prior to the start of the study after obtaining permission from the National Liver Institute's management. An official letter explaining the research objectives and importance was submitted to justify access to participants and study settings.

Ethical Considerations

The Menoufia University Faculty of Nursing's Ethical Research Committee provided ethical approval. All participants gave their informed consent after being fully informed about the study's goals, methods, and rights. Confidentiality of personal information was assured, and involvement was completely voluntary.

Pilot Study

To assess the tools' clarity, viability, and completion time, pilot research involving 30 women, or 10% of the entire sample, was carried out. The required changes were made in light of the pilot's results to guarantee the full study's efficacy.

Data Collection

In order to fully comprehend the findings, the researchers conducted an extensive review of both local and international literature. Relevant information was gathered from books, scientific journals, magazines, and reliable internet sources. Based on this review, study instruments were developed and validated. Fieldwork

was conducted from April to August 2023 at the National Liver Institute. The researchers attended the study setting three days per Monday through Friday, 9:00 a.m. to 12:00 p.m., where they introduced themselves to the medical team, including doctors and nurses, and explained the goal and importance of the study. Informed consent was requested from participants who satisfied the inclusion requirements before data collection began. The research was carried out in four successive stages:

1. Phase of Assessment

In this stage, the investigators individually met each woman diagnosed with a persistent infection of the HCV who qualified for DAA therapy at the outpatient clinic. After explaining the study objectives and securing informed consent, participants completed an assessment of sociodemographic and the FSFI to assess baseline sexual health status prior to initiating DAAs.

2. Planning Phase

A comprehensive educational booklet was developed by researchers. The booklet included:

- The definition and importance of sexual health
- Components of healthy sexual function
- Strategies to improve physical and psychological well-being
- Techniques to enhance sexual satisfaction and function

This content served as the foundation for the AI-based mobile education intervention.

3. Implementation Phase

The intervention was delivered using artificial intelligence through mobile-based education. The study group received the educational content via two instructional sessions, with groups of five women participating and each lasting thirty minutes. The sessions with AI support used an educational booklet as a primary teaching tool, and content was reinforced through mobile-based interactive support.

Session 1 Topics

- Definition and importance of sexual health
- Characteristics of a sexually healthy individual
- Consequences of poor sexual health

Session 2 Topics

- Measures to improve sexual health:

Safe Sex: Using condoms and hygienic practices to prevent HCV transmission.

Psychological Well-being

Breathing exercises, relaxation techniques, walking, emotional expression, and specialist consultation. Physical activity (e.g., Kegel, yoga, walking) was emphasized for enhancing libido and performance, supported by Stanton et al. (2018).

Sexuality-Enhancing Measures

- Counseling sessions focusing on reducing anxiety and enhancing sexual responsiveness

- Addressing psychological barriers to sexual satisfaction
- Encouraging sensory stimulation through taste, smell, sound, touch, and visual cues as described by Binik and Hall (2014)
- Practicing pelvic exercises (e.g., Kegels), recommended at 20 repetitions per session, twice daily, three days a week, as suggested by Lolowang, Afiyanti, and Ungsianik (2019)

4. Evaluation Phase

The FSFI was given again after the conclusion of the intervention to both study and control groups. The outcomes were then compared to assess effect of AI-based mobile education on sexual wellbeing of women receiving DAAs for HCV.

Data analysis: The data was organized, inspected, coded, tabulated, analyzed, and presented using descriptive statistics, such as frequencies and percentages for qualitative variables. A test of significance was used to compare the study and control groups. When P>0.05, there is no statistically significant difference. A P value of 0.05 denotes a statistically significant difference, whereas a P value of 0.001 denotes an extremely significant difference.

Results

The personal details of the women in the study and control groups, who were all between the ages of 18 and 50, are shown in Table 1. Of the study and control groups, over half (50.7% and 53.3%, respectively) were between the ages of 28 and 39. Notably, age, educational attainment, domicile, and socioeconomic status did not differ statistically significantly between the study and control groups (P > 0.05).

With all p-values over 0.05, Table 2 shows that the mean scores of the FSFI domains (desire, arousal, lubrication, orgasm, and pain) did not change statistically significantly between the study and control groups.

The research group's mean scores in every FSFI domain were significantly higher than those of the control group (P ≤0.001), according to Table 3.

Figure 1 illustrates that the total FSFI score significantly improved within the study group following nursing intervention and DAAS. Specifically, the post-intervention mean score (18.8 ± 0.27) was significantly higher than the pre-intervention score (16.77 ± 1.6).

Regarding all facets of sexual health knowledge and enhancement techniques, Table 4 reveals no discernible differences between the study and control groups (P > 0.05).

Table 5 demonstrates a statistically significant increase in the study group's (the women with hepatitis C) sexual health knowledge as compared to the control group. Following the nurse intervention, a greater proportion of study group participants achieved good knowledge scores in key areas such as the definition (53.3%), importance (46.7%), influencing factors (46.7%), enhancers

(53.3%), impairers (46.7%), sexual cycle (46.7%), measures to improve sex (53.3%), and nutrition (53.3%). Conversely, the control group possessed significantly lower percentages in each domain.

Figure 2 demonstrates that just one-third (33.3%) of both groups knew enough about sexual health before the intervention. While the control group mostly continued to have inadequate knowledge after the intervention, the majority of the study group gained good knowledge.

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Table 1: The study and control groups' sociodemographic attributes in the Context of Mobile-Based AI Education for Women Receiving DAA Treatment for HCV (n=150)

Variables	Study group (n=75)		Control group (n = 75		x 2	P-value
	No.	%	No.	%		
Age						
18- 28	12	16.0	15	20.0	0.351	> 0.05
>28 – 39	38	50.7	40	53.3		
>39 – 50	25	33.3	20	26.7		
Educational Level						
Read and write	24	31.3	25	33.3	0.140	> 0.05
Secondary	24	32.0	24	32.0		
University	27	36.7	26	34.7		
Husband education.						
Read and write	27	36.0	60	40.0		.
Secondary	23	30.7	40	26.7	0.151	> 0.05
University	25	33.3	50	33.3		
Occupation						
Housewife	12	16.0	15	20.0	0.351	> 0.05
Employee	38	50.7	40	53.3		
Health-related career	25	33.3	20	26.7		
Husband occupation.						
Unemploye	27	36.0	60	40.0		.
Employee	23	30.7	40	26.7	0.151	> 0.05
Worker	25	33.3	50	33.3		
Residence						
Rural	43	58.0	47	62.7	1.068	> 0.05
Urban	32	42.0	28	37.3		
Income						
Enough	44	58.7	50	66.0	1.720	> 0.05
Not enough	31	41.3	25	34.0		

Table 2: FSFI Domains in the Study and Control Groups Prior to DAAS Treatment and Nursing Intervention in the Context of Mobile-Based AI Education for Women Receiving DAA Treatment for HCV

Domains	Study Group (n=75) (X± SD)	Control Group (n =75) (X± SD)	*t test	P-value
Desire	3.47±1.17	3.52±0.91	0.012	>0.05ns
Arousal	3.56±0.86	3.49±0.83	0.213	>0.05ns
Lubrication	4.48±0.93	4.38±0.86	0.243	>0.05ns
Orgasm	4.54±0.94	4. 46±1.14	0.412	>0.05ns
Satisfaction	3.97±0.84	3.97±0.84	0.512	>0.05ns
Pain	5.21±1.06	5.23±1.08	0.621	>0.05ns
Total	17.77±1.6	17.75±1.5	1.038	>0.05ns

* Independent sample test; N.B. ns indicates that no statistically significant difference was found.

Table 3: In the context of mobile-based AI education for women receiving DAA treatment for HCV, FSFI domains following DAAS treatment and nursing intervention in the study group and the control group

Domains	Study Group (n =75) (X± SD)	Control Group (n =75) (X± SD)	*t test	P-value
Desire	4.25±1.0	3. 46±1.14	5.012	≤0.001**
Arousal	4.07±0.61	3.35±0.83	6.213	≤0.001**
Lubrication	4.26±0.6	3.49±0.86	6.243	≤0.001**
Orgasm	4.05±0.67	3.52±0.91	5.412	≤0.001**
Satisfaction	3.73±1.01	2.97±0.84	4.512	≤0.001**
Pain	4.85±0.87	4.23±1.08	6.621	≤0.001**
Total	18.8±0.27	16.75±1.5	10.038	≤0.001**

N.B. ** indicates that the difference was quite substantial.

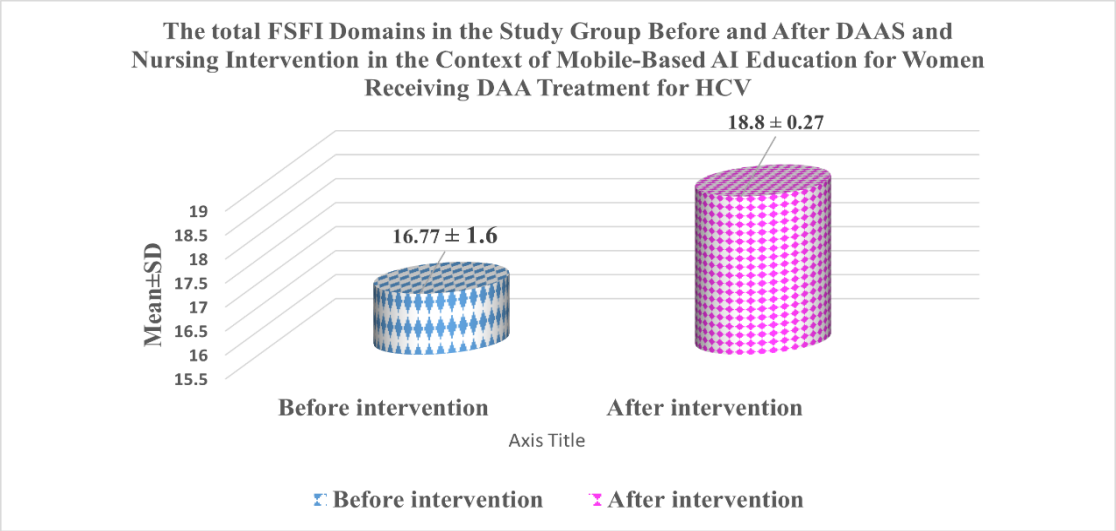

Figure 1: Before and After DAAS and Nursing Intervention, the Study Group's Total FSFI Domains in the Context of Mobile-Based AI Education for Women Receiving DAA Treatment for HCV

Table (4): The study and control groups' level of sexual health knowledge prior to the Nursing Intervention in the Context of Mobile-Based AI Education for Women Receiving DAA Treatment for HCV

Items	Study group (n=75)		Control group (n =75)		X^2	P-value
	No.	%	No.	%		
Definition						
- Good	25	33.3	20	26.7		
- Average	15	20.0	30	40.0	5.67	> 0.05ns
- Poor	35	46.7	25	33.3		
Importance						
- Good	25	33.3	20	26.7		
- Average	30	40.0	30	40.0	6.02	> 0.05ns
- Poor	20	26.7	25	33.3		
Factors affecting sexual wellbeing						
- Good	30	40.0	25	33.3	14.91	> 0.05ns
- Average	15	20.0	30	40.0		
- Poor	30	40.0	20	26.7		
Factors improving sexual wellbeing						
- Good	26	34.7	25	33.3		
- Average	24	32.0	30	40.0	0.23	> 0.05ns
- Poor	25	33.3	20	26.7		

Factors impairing sexual wellbeing						
- Good	20	26.7	30	40.0		
- Average	20	26.7	20	26.7	7.33	> 0.05ns
- Poor	35	46.6	25	33.3		
Cycle of sexual intercourse						
- Good	25	33.3	25	33.3	2.20	> 0.05ns
- Average	20	26.7	15	20.0		
- Poor	30	40.0	35	46.7		
Measures used to improve sexual wellbeing						
- Good	20	26.7	25	33.3	2.22	> 0.05ns
- Average	25	33.3	20	26.7		
- Poor	30	40.0	30	40.0		
Nutrition that improves sex						
- Good	25	33.3	25	33.3	.75	> 0.05ns
- Average	10	13.3	35	46.7		
- Poor	40	53.4	15	20.0		
Exercise that improves sex						
- Good	30	40.0	30	40.0	6.02	> 0.05ns
- Average	20	26.7	25\	33.3		
- Poor	25	33.3	20	26.7		

Note that ns indicates that no statistically significant difference was found.

Table 5: Compare between the Study and Control Groups after the Nursing Intervention in the Context of Mobile-Based AI Education for Women Receiving DAA Treatment for HCV regarding their Level of Knowledge Regarding Sexual Health

Items	Study group (n=75)		Control group (n=75)		X^2	P-value
	No.	%	No	%		
Definition						
-Good	40	53.3	20	26.7		
-Average	25	33.3	30	40.0	16.83	≤0.001**
-Poor	10	13.4	25	33.3		
Importance						
-Good	35	46.7	20	26.7	6.88	≤0.001**
-Average	25	33.3	30	40.0		
-Poor	15	20.0	25	33.3		
Factors affecting sexual wellbeing						
-Good	35	46.7	25	33.3	10	≤0.001**
-Average	30	40.0	30	40.0		

-Poor	10	13.3	20	26.7		
Factors improving sexual wellbeing						
-Good	40	53.3	25	33.3	24.92	≤0.001**
-Average	30	40.0	30	40.0		
-Poor	5	6.7	20	26.7		
Factors impairing sexual wellbeing						
-Good	35	46.7	30	40.0	17.63	≤0.001**
-Average	30	40.0	20	26.7		
-Poor	10	13.3	25	33.3		
Cycle of sexual intercourse						
-Good	35	46.7	25	33.3	24.35	
-Average	25	33.3	15	20.0		≤0.001**
-Poor	15	20.0	35	46.7		
Measures used to improve sexual wellbeing						
-Good	35	46.7	25	33.3	14.44	≤0.001**
-Average	25	33.3	20	26.7		
-Poor	15	20.0	30	40.0		
Nutrition that improves sex						
-Good	40	53.3	25	33.3	15.10	≤0.001**
-Average	20	26.7	35	46.7		
-Poor	15	20.0	15	20.0		
Exercise that improves sex						
-Good	40	53.3	30	40.0	5.40	≤0.001**
-Average	20	26.7	25	33.3		
-Poor	15	20.0	20	26.7		

N.B. ** indicates that the difference was quite substantial.

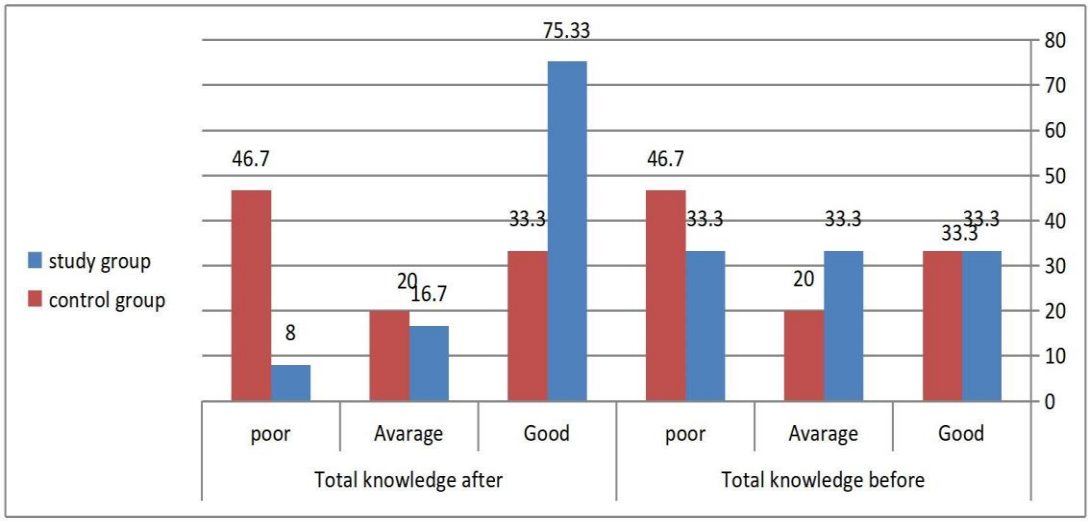

Figure 2: Before and after the nursing intervention, the study and control groups' overall sexual health knowledge levels in the Context of Mobile-Based AI Education for Women Receiving DAA Treatment for HCV

Discussion

The current study investigated how women undergoing DAA therapy for hepatitis C's sexual health was affected by nursing care and artificial intelligence-driven mobile-based education. Results showed that there were no statistically significant differences between the study and control groups on any of the FSFI's pre-intervention subscales. Even though the control group reported more pain, the study group showed significantly higher FSFI mean scores across all domains (desire, arousal, lubrication, orgasm, satisfaction, and pain) after receiving DAA treatment and putting the mobile-based educational intervention into practice. These gains were statistically significant. and highlight positive influence of technology-based education when integrated into patient care.

From the researchers' perspective, these findings can be attributed to the multifaceted nature of chronic HCV, which not only affects hepatic function but also manifests extrahepatically, contributing to psychosocial challenges such as depression, anxiety, stigma, and marital strain. These problems can significantly affect one's quality of life and sexual health. This study's use of mobile-based AI education made it possible to deliver information in a personalized, easily accessible, and stigma-free manner. This could have given participants

accurate knowledge, decreased misconceptions (such as those spread through shared meals or beverages), and promoted candid discussion about private matters.

This is consistent with **Saker's (2019)** research, which found that after being diagnosed, women with HCV in Egypt had significantly lower levels of sexual satisfaction and stable households, frequently because of stigma and misunderstandings in society. Because of the strongly ingrained cultural taboos and false information around the disease, women with chronic HCV occasionally experienced divorce or social rejection. In a similar vein, **Evangelia et al. (2016)** noted in Greece that patients receiving HCV therapy had reduced sexual functioning, most likely as a result of psychological stress and medication side effects.

In support of these findings, (**Tunçel et al. 2019)** noted that vaginal dryness, itching, and burning are common symptoms experienced by women with chronic HCV, especially during interferon and ribavirin therapy, which further exacerbates sexual dysfunction. About one-third of participants in both groups showed adequate knowledge of sexual health, according to the baseline (pre-test) assessment, which showed no appreciable difference between the control and study groups. However, after the intervention, the majority of the women in the study group shown a marked improvement in their knowledge of sexual health, but nearly half of the control group remained at very low levels. The usefulness of AI-powered mobile-based interventions in recognizing, addressing, and educating women on sexual health issues in a non-threatening and culturally appropriate way is highlighted by this statistically significant improvement.

Given the paucity of previous research investigating the impact of nurses and digital treatments in improving sexual health among women with HCV, these findings are very significant. **Evans (2013)** pointed out that nurses frequently encounter difficulties when talking to patients about sexuality and need structured resources and training to handle these conversations tactfully and successfully. By providing consistent, private, and tailored sexual health education, mobile-based AI interventions can assist nurses and enhance the quality and results of care. According to **WHO (2022)**, providing up-to-date, accurate knowledge about the social, psychological, and physical aspects of sexual health is part of comprehensive sexuality education. Such interventions can close information gaps, debunk myths, encourage positive attitudes, and enable people to make informed

decisions about their sexual and reproductive health when they are provided via digital platforms.

The current study concludes by highlighting the potential contribution of artificial intelligence incorporated into mobile learning platforms to enhancing the sexual health function and awareness of women undergoing DAA for HCV. In Egypt and other comparable contexts, this technology-driven method offers a scalable, culturally aware, and successful way to enhance clinical treatment and address a frequently disregarded aspect of women's health.

Conclusion

The results of this study demonstrate that after undergoing HCV medication in conjunction with artificial intelligence through mobile-based education, the women in the study group showed a notable improvement in every FSFI domain. This result validates the study's initial hypothesis. Additionally, a within-group comparison showed that the study group's FSFI scores significantly increased after the intervention, demonstrating the efficacy of the combined strategy. The second hypothesis is supported by this result. Furthermore, study participants showed a statistically significant improvement in their overall knowledge of sexual health and strategies for improving it when compared to those in the control group. This supports the third study hypothesis. All the study's hypotheses are validated and approved in light of these results.

Recommendations

- Integrate mobile-based artificial intelligence into the standard care plan for women receiving HCV medications, focusing on improving sexual health awareness and addressing misconceptions.
- Provide continuous nursing support and counseling for women undergoing HCV treatment to address sexual dysfunction, reduce stigma, and enhance quality of life.

Further Research

- Implement nationwide awareness campaigns targeting women living with HCV to reduce stigma associated with the disease and its perceived link to sexual transmission.
- Incorporate sexual health assessment tools (e.g., FSFI) into routine clinical evaluations for women receiving HCV treatment to ensure early identification of dysfunction.

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