Effect of Blended Learning Program on Awareness of Parents' Caring for Children with Herpes Simplex

Fatma Abdellah Mohamed^a, Atiat Osman^b, Marwa Abd Allah Salem Ramdan^c

^aLecturer of Pediatric Nursing-Faculty of Nursing - South Valley University, Qena ^bAssistant Professor of Pediatric Nursing, Faculty of Nursing, South Valley University, Qena ^cLecturer of pediatric nursing, Faculty of Nursing, Beni-Suef University

Abstract

Background: Infection with the Herpes Simplex Viruses (HSV) type 1 and 2 is fairly frequent. While HSV-1 infections have traditionally been linked with oral lesions and HSV-2 infections with genital illness, both virus serotypes can infect either region. The purpose of this study was to assess how a blended learning program affected parents' knowledge of how to care for children with herpes simplex. Research design: A quasi-experimental design (Pretest/Post-test quasi-experimental design) was used in this study. Setting: This study was conducted at the Out-Patient Pediatric Clinic at Beni-Suef University Hospital. Subjects: The study subjects consisted of a purposive sample of 100 parents having children diagnosed with herpes simplex. Tools of data collection: Two tools were used: Tool (1) A structured questionnaire; part (1) Demographic data of parents, part (2) Knowledge test (Pre-Post). Tool (2) A self-reported practice (pre/post-tests). Results: It showed that parents' knowledge and practice regarding caring for children with herpes simplex have improved in the post-test program compared with the pre-test program, with a highly statistically significant difference. Conclusion: Blended learning program regarding caring for children with herpes simplex had a significant positive effect in improving parents' knowledge and practice towards caring for children with herpes simplex. Recommendation: Providing continuous education and training for parents regarding caring for children with herpes simplex.

Keywords: Blended, program, parents, care, herpes simplex

Introduction

E-learning, which is based on using online tools like academic e-learning platforms to play recorded lectures and seminars, self-tests to track academic progress, and Microsoft Teams (MT) programs that allow holding realtime, online meetings instead of in-person ones, is a sensible solution for education, as is distance teaching (Nijakowski, et al., 2021).

Blended learning, which is rapidly becoming the advanced norm for providing learning material in nursing education, is defined as a teaching method that combines online digital materials with face-to-face instruction. It involves a methodical blending of in-person contacts and interactions via technology between learners, facilitators, and resources. It has been found to encourage proactive learning practices rather than a result of instruction, which is meant by self-regulated learning (AbdelHakim, et al., 2021).

Online and in-person components are both a part of blended learning. There are a few well-known blended learning models. The Rotation model, Flex model, A la carte model, and Enriched virtual model are the four successful blended learning models. Furthermore, the Hybrid format model is another blended learning paradigm developed by Malczyk (2018). (Lorch, 2020).

Since its introduction, blended learning has emerged as the best option for training future physicians. It blends traditional clinical workshops (while maintaining a strict hygienic regime) with e-learning activities, which allows the acquisition of all practical skills and essential theoretical knowledge. Additionally, blended learning makes it possible to communicate with module tutors more frequently via instant messaging in order to get solutions to questions that are raised throughout the online lectures. Multiple-choice questions, questions, and/or true-or-false matching descriptions with images or clinical examples

are the formats used for the theoretical exams. The students should remain within camera range throughout the whole exam session (Nijakowski et al., 2021).

Blended learning has many benefits, including fostering and optimising learning interactions, helping teachers explain science material, allowing students to conduct scientific investigations, allowing for the application of a scientific approach, being flexible and costeffective, and teaching students to learn independently, all of which can impact their learning outcomes. Setting learning objectives and attempting to monitor, control, and regulate their motivation. behaviour, and thought processes while being guided and constrained by the objectives and the contextual aspects of their surroundings constitute the active and beneficial process of independent learning. Additionally, pupils who get internal motivation and support are more likely to succeed academically (Simanjuntak et al., 2023).

Common and chronic, herpes simplex virus (HSV) infections can cause painful blisters or sores at the infection site, whereas infected individuals frequently show no symptoms. Herpes simplex 1 (HSV-1) and herpes simplex 2 (HSV-2) are the two forms of HSV, and the clinical characteristics and severity of each kind differ. Herpes labialis, herpetic stomatitis, and keratoconjunctivitis are frequently brought on by HSV-1 (**De Rose et al., 2023**).

One of the most prevalent long-term viral diseases in people is herpes. This virus has the ability to generate potential recurrences and to remain dormant in ganglion cells and nerves. Herpes simplex virus 1 (HSV-1) causes oral infections, whereas HSV-2 affects the vaginal system. These are the two main forms of herpes viruses. HSV-1 is the cause of the contamination, which is solely human. Direct contact with an individual during the initial infection, recurrence, or asymptomatic viral excretion is how it is spread. Childhood is the primary time for initial HSV-1 interaction, particularly between 6 months and 3 years following the loss of maternal antibodies (WHO, 2024).

The majority of the time, this infection is asymptomatic or almost so, with clinical symptoms that are somewhat similar to those of dental eruption. However, in 25–30% of cases, the initial encounter causes painful pharyngitis or gingivostomatitis. After then, the virus stays dormant in a cephalic nerve ganglion. Recurrence may occur in response to a trigger, such as the sun, cold, infection, stress, or menstruation (Khalifa et al., 2022).

uman infections caused by the herpes simplex virus (HSV) are common throughout the world. persistent, and marked by reactivations at the infection site on a regular basis. Orolabial herpes, often known as cold sores, is frequently caused by HSV type 1, which is mainly spread by oral-to-oral contact. Rarer illnesses including encephalitis and keratitis and other ocular sequelae are also brought on by the type 1 virus. 4. While reactivations are less common than for HSV type 2, HSV type 1 genital infections from oralto-genital contact are on the rise (James et al., 2020).

Significance of the study

Around 60% to 95% of people worldwide have either HSV-1 or HSV-2. HSV-1 is typically contracted in childhood. Rates of both HSV-1 and HSV-2 naturally rise with age because neither virus has a cure. According to AlMukdad et al. (2023), the prevalence of HSV-1 ranges from 40% to 60% in communities with better socioeconomic status and from 70% to 80% in populations with poor socioeconomic status. (AlMukdad et al., 2023). For teachers, blended learning offers benefits. First, there are fewer or no printed materials since more digital tools are being used. Keeping track of assignments and materials digitally is more organised and efficient than keeping track of Online learning tools, like paper materials. Google Classroom, gather and assemble information about students' participation and unfinished assignments in an easy-to-read style (Lorch, 2020). Thus, the purpose of this study is to assess how a blended learning program affects parents' care of children who have herpes simplex.

Operational definition

Blended learning program: According to Smith and Brame (2015), blended learning is an educational strategy that incorporates interactive online resources with conventional on-site classroom techniques. In addition to using digital resources, blended learning necessitates the teacher and students' conventional in-person interactions.

Aim of the Study

This study aimed to evaluate the effect of a blended learning program on awareness of parents caring for children with herpes simplex.

The study's aim can be accomplished through the following steps:

- 1. Assess parents' knowledge about caring for their children with herpes simplex before implementing the learning program.
- 2. Assess parents' practices about caring for their children with herpes simplex before implementing the learning program.
- 3. Implement a blended learning program about parents caring for their children with herpes simplex.
- 4. Evaluate parents' knowledge about caring for their children with herpes simplex after implementing the blended learning program.
- 5. Evaluate parents' practices about caring for their children with herpes simplex after implementing the blended learning program.

Research Hypotheses:

- 1. The parents' knowledge will be significantly improved after the implementation of the blended educational program than before.
- 2. The parents' practices will be significantly improved after the implementation of the blended learning program than before.

Materials and Methods

Study Design

A quasi-experimental design (Pretest/Post-test quasi-experimental design) was used in this study. This design used a sequential self-control/study group design, which means that the same participants considered the control group before implementing the program (pre-test) and as the study group after implementing the program to compare means and measure the degree of change occurring as a result of the program.

Study Setting

The study was conducted at the Out-Patient Pediatric Clinic at Beni-Suef University Hospital.

Study Subjects

The study subjects consisted of a purposive sample of 100 parents having children diagnosed with herpes simplex. All eligible approved parents included in the study according to inclusion criteria: a) didn't attend any program about herpes simplex disorder, b) didn't have a medical background or work in the medical field, c) providing care to the child with herps, d) regularly attendance at the setting, e) they can read, f) and have an available phone number to facilitate communication and follow up.

Sample Size

Sample size has been estimated based on the following formula n= $(z2 \times p \times q)/D2$, in which β equals 80% and the confidence interval equals 95%. The estimated sample size was 80 participants, and it has been maximized to 100 to avoid dropout.

Tools of Data Collection

For the current study, two tools were used:

Tool I: A structured questionnaire: It consisted of two parts:

Part 1: Demographic data of parents such as (age, sex, educational level, occupation, and residence).

Part 2: Knowledge test (Pre\Post)

This tool was designed by the researchers in the light of reviewing relevant articles, previous studies, and related literature (Al-Mukdad et al., 2023), (Anuar & Zaki, 2023) & (Aldè et al., 2023). It is used to assess parents' knowledge regarding caring for children with herpes simplex, such as: herpes definitions, causes, risk factors, signs and symptoms, complications, management, prevention, etc.

The scoring system was as follows:

Based on the parents' responses, a scoring system was employed to assess their knowledge; each question was given one (1) grade for a "correct" response and zero (0) for a "incorrect" or "I don't know" response; the questionnaire's overall score amounted to thirteen grades. Women who scored 75% or more on the knowledge test were classified as having excellent knowledge, women who scored less than 75% to 50% having average knowledge, and mothers who scored less than 50% as having low knowledge.

Tool II: A self-reported practice (pre/post-tests).

This tool was designed by the researchers in the light of reviewing relevant articles, previous studies, and related literature (Anuar & Zaki, 2023) & (Berkhout et al., 2023) to evaluate parents' practices regarding caring for children with herpes simplex as hygiene practices, nutrition, elimination, wearing clothes, control of infection.

The scoring system will be as follows:

Based on the responses from the parents who were the study's subjects, a grading system was employed to assess the parents' practices for the care of their children with herpes simplex. Each step receives a score of two if completed, one if unfinished, and zero if not completed. Parents' reported practices totaled 42 points (8 points for the children's mouth care, 7 points for the children's skin care, 9 points for fever management, 15 points for treatment instructions, 3 points for the children's nutrition) subsequently transformed into a percentage according (Kafi & Mohamed 2020) as follows:

➢ 65% (More than 28 scores) = Satisfactory practices.

< 65% (less than 28 scores) = Unsatisfactory practices

Validity and reliability of the tools:

For validity, three subject-matter experts determined the content validity. Their thoughts on the scoring system, uniformity, and format layout of the tools were sparked. The correctness, applicability, and competency of the tool's material were confirmed. Tool one and tool two validities are 95% and 97%, respectively. For reliability, after the collection of the pilot study, which equals 10% (10 parents) of the sample size, Cronbach's Alpha test was run to test the internal consistency of the tools. Alpha Cronbach's values are 0.80 and 0.76 for tool one and tool two, respectively.

Ethical Considerations

The study was approved by the Ethical Committee of the Faculty of Nursing, Beni-Suef University. Once the nature and aim of the study were explained to the participants, they were asked to verbally consent to participate. Study volunteers are not in danger while the research is being applied. Data gathering will be privately. Anonymity conducted and confidentiality will be guaranteed. Study participants are free to decline participation or leave the study at any moment, without explanation or consequences.

Data Collection Procedure

Data collection was conducted over 3 months extending from the beginning of December 2024 to the end of February 2025. Approval from the director of the Ben-Suef University Hospital was obtained before collection of data. The learning program was developed by the researchers after observing the literature review and pertinent research. It is prepared in an Arabic booklet about guidelines for parents regarding herpes simplex care.

The intervention

The blended learning program included theoretical and practical parts: the theoretical parts contained an introduction about herps, causes, clinical features, the child's needs, and complications. The practical parts contained: oral ulcer care, skin care, fever management, child nutrition, and treatment instructions. The total number of sessions to conduct the program was 43 (23 sessions for assessment and implementation phase, 20 sessions for evaluation phase). Data collected through inperson interviews with parents who are available with the child during outpatient clinic visits. The researcher, the mother, and the child completed questionnaires.

Field of work:

1- Assessment phase:

Data was collected using the study tools. The researchers will use the structured interviewing questionnaire (Tool I- pre-test) to assess parents' socio-demographic data, knowledge regarding caring for children with herpes simplex. Then, the researchers distributed a self-reported practices (Tool II-pre-test) to assess parents' practices regarding caring for children with herpes simplex.

- Planning phase:

After conducting interviews, assessments, and reviewing relevant literature, the

researchers created printed, colored guidelines booklets, and videos on herpes simplex.



Figure (1): Sampling Process

The researchers also determined the instructional media, teaching methods, number of sessions, and their content.

3- Implementation phase:

Parents were given a session about knowledge and practices regarding caring for children with herpes simplex. The blended learning model was segmented into two types of sessions; sessions that were delivered face to face and sessions that were delivered online by using a live broadcast Zoom application. The researchers conducted the intervention by organizing sessions, for 30 to 40 minutes dedicated to each session. These sessions were replicated for each subgroup of 1-10 parents per session. A simplified Arabic language was used to ensure understanding. The researchers monitored the adherence of these parents to the blended learning program regarding herpes simplex through telephone communication.

4- Evaluation phase:

Parents were evaluated before the intervention, immediately after the intervention (2 weeks after baseline). The parents' knowledge and practices regarding caring for children with herpes simplex were evaluated using pre-posttest tools (Tool I – Part 2, Tool II).

Results

Table (1): Studied Mothers Personal Characteristics (n=100). Less than half of the parents (47%) fall within the age range of 20 to 30 years. The educational background of the parents revealed that more than half (58.4%) had a university education. It also provided that among the participants, 73.3% resided in rural areas, while the remaining (26.7%) lived in urban areas.

Figure (2): Percent distribution of the studied children by age, Most of the studied children were aged from 2 to 4 years, with the highest percent for 4-year-olds.

Table(2):Parents'KnowledgeRegarding Herps Pre and Post-test (n=100).

Parents knowledge about herps such as definition, causes, symptoms, and complications, etc. Significantly increased after the implementation of the program more than before.

Figure (3): Percent distribution of the studied children by gender. More than 80% of the studied children were male, while females were 18%.

Figure (4): Total Knowledge Regarding herps Pre and Post-test (n=100). It illustrates that 44% of studied mothers had poor knowledge before the implementation of the program compared to 12% in after the implementation.

Table(3):Parents'PracticesRegarding Herps Pre and Post-test (n=100).

It is revealed that a significant improvement in parents' practices about herps care such as mouth, skin care and fever management, nutrition after receiving the program.

Figure (5): Total Reported Practice Regarding herps Pre and Post-test (n=100). It shows that more than half (60%) of the mothers in the study had unsatisfactory practices before the blended program, compared to only 5% after.

Table (1): Studied Mothers' Characteristics

| Items | N0/% |
|----------------------|------------|
| Mother Age in years | |
| - 20 - 30 | 47 |
| - >30 - 40 | 36 |
| - >40 - 50 | 17 |
| Mean ± SD | 30.8±5.293 |
| Range | 22-45 |
| Education | |
| - Illiterate | 4 |
| - Not read and write | 12 |
| - Basic | 36 |
| - Secondary | 33 |
| - University | 15 |
| Residence | |
| - Rural | 63 |
| - Urban | 37 |
| Mothers' occupation | |
| - Housewife | 87 |
| - Employee | 13 |







Figure (3): Percent distribution of the studied children by gender(n=100).

| Table (2): Parents | ' Knowledge Reg | garding Herps F | Pre and Post-test. |
|--------------------|-----------------|------------------------|--------------------|
|--------------------|-----------------|------------------------|--------------------|

| | Studied Mothers' knowledge (n=100) | | | |
|-----------------------|------------------------------------|-------------|--------|---------|
| Items | Pre- Test | Post – Test | Paired | Р |
| | No/% | No/% | t test | Value |
| - Definition of herps | 25 | 70 | 10.151 | 0.0001* |
| - Causes | 27 | 61 | 9.502 | 0.0001* |
| - Signs and symptoms | 30 | 70 | 7.883 | 0.000* |
| - Complication | 33 | 71 | 7.867 | 0.000* |
| - Types | 10 | 56 | 8.945 | 0.0001* |
| - Home Care | 27 | 61 | 7.999 | 0.000* |
| - Prevention | 25 | 70 | 5.667 | 0.000* |
| - Follow up | 33 | 76 | 4.740 | 0.0001* |

Figure (4): Total Knowledge Regarding herps Pre and Post-test.



Table (3): Parents' practices Regarding Herps Pre and Post-test.

| Items | Pre- Test | Post – Test | Paired t test | P. Value |
|--|-----------|-------------|------------------|----------|
| | % | % | | |
| 1- Mouth care | 15 | 39 | 5.679 | 0.000** |
| 2- Skin care | 20 | 42 | 7.539 | 0.000** |
| 3- Fever management | 12 | 33 | 4.065 | 0.0001** |
| 4- Treatment instructions (oral-local) | 15 | 33 | 7.277 | 0.000** |
| 5- Nutrition | 16 | 56 | 23.911 | 0.000** |



Figure (5): Total Reported Practice Regarding herps Pre and Post-test.

Discussion:

Herpes simplex is a relatively common viral infection. It has been hypothesized that approximately one-third of the world's population has experienced symptomatic HSV-1 at some point throughout his or her lifetime. There are two types of herpes simplex virus, type 1 and type 2 (HSV1 and HSV2). Herpetic lesions (HSV1) are present on the skin or mucous membranes (the thin moist lining of many parts of the body such as the nose, mouth, throat and genitals) (Bansal et al., 2018). Individuals in developing countries with a lower socio-economic status become sero-positive for HSV-1 at an earlier age than their counterparts in developed countries (Awad & Hamad, 2018).

Blended learning is more relevant today than it ever has been. Blended learning is the usage of technology to enhance learning, both in the brick-and-mortar school building and online. Blended learning improves learning outcomes and learner engagement. Therefore, courses that are designed with blended learning strategies have higher success rates than faceto-face courses and fully online courses (Lorch, 2020).

The current study aimed to evaluate the effect of a blended learning program on awareness of parents caring for children with herpes simplex. Regarding characteristics of studied parents, the present study showed that all of the studied parents were females, this result is by the findings of Cham et al., (2016), who revealed that the vast majority of participants were females. From the researcher's point of view, this may be due to mothers being more occupied than fathers with caring for children and following up at pediatric clinics.

According to age, the current study presented that approximately half of the studied parents were aged between 20 and 30 years. As regards educational background of the studied parents, findings of the study reveal that more than two thirds of the studied parents had a basic and secondary education. From the researchers' point of view, this may be due to the fact that a high level of education had been spread and is more available than in the past and that citizens are more aware of importance of education for society. These findings are congruent with the results of the study done by Ghazy et al., (2024), entitled "Knowledge and attitude towards Herpes Simplex Virus-2 in Al-Jouf region, Saudi Arabia", they demonstrated that, approximately half of the studied

participants were aged between 21–30 years and the majority of participants were university graduates.

Concerning the residence of studied parents, the present study provided that about two thirds of the participants', resided in rural areas, while one third lived din urban areas. Regarding the occupation of the studied parents, this study reported that the vast majority of studied parents were housewives.

According to characteristics of the studied children, the present study revealed that the majority of the studied children were aged ranged from 2 to 4 years, with about one-third of the studied children being 4 years old. Regarding gender, the current study presented that more than three quarters of the studied children were male, while about one fifth of them were females. From the researchers' point of view, this may be due to herpes infection is more distributed in preschool children than any other age.

Concerning parents' knowledge regarding caring for children with herpes simplex, the present study revealed that studied parents' knowledge had improved in post-test program compared with pre-test program with a highly statistically significant difference. These results were coherent with findings of the study of Gulzar et al., (2022), entitled "Enhancing the knowledge of parents on child health using eLearning in a government school in the semirural community of Karachi, Pakistan", who demonstrated that there was an enhancement in parental awareness about common health conditions among children in post-test eLearning program bout common health conditions among children.

Regarding parents' total score knowledge regarding caring for children with herpes simplex, the present study indicated that, approximately one third of studied parents had excellent level of knowledge regarding caring for children with herpes simplex during pre-test program, which improved to the approximately three quarters of studied parents had excellent level of knowledge regarding caring for children with herpes simplex at post-test program with a highly statistically significant difference. From the researchers' point of view, this may be due to the blended learning program helps parents to understand contents better than traditional lecture, also it is easier to apply, saves time and efforts and can be available at any time, which helps remembering and retrieval of knowledge.

This result agreed with the findings of the study done by Hover & Bertke, (2017), entitled "Herpes simplex virus 1 and 2 educational assessment of young adults in rural southwest Virginia", who reported that, respondents' general knowledge of herpes simplex was relatively comprehensive, they had corrected answers and were aware about signs and symptoms of herpes simplex. On the contrary, the findings of the study of Bansal et al., (2018), they concluded that, the participants showed only a fair level of knowledge about herpes infection.

Concerning parents' practice regarding caring for children with herpes simplex, the present study revealed that studied parents' practice had improved in post-test program compared with pre-test program with a highly statistically significant difference. These results were supported with findings of the study of **Heggarty et al., (2020)**, who demonstrated that care providers were better informed about epidemiology of herpes simplex virus and were more familiar with risks and how to care for infected children.

Regarding parents' total score practice regarding caring for children with herpes simplex, the present study revealed that, most of studied parents had unsatisfactory practice regarding caring for children with herpes simplex during pre-test program, which improved to majority of studied parents had satisfactory practice at post-test program with a highly statistically significant difference. From the researchers' point of view, this may be due to using blended learning as a teaching method provides learners with а chance for demonstration, re-demonstration and correction of their mistakes, which can lead to gaining learners confidence and improving practical skills. Conversely, findings of study of Tadanki et al., (2024), reported that participants could

not cope and did not have skills about how to practice care with herpes outbreak infections.

Conclusion:

Based on the results of the present study, it can be concluded that three were highly statistically significant improvements in parents' knowledge and practice at post-program implementation.

Recommendation:

In the light of the findings of the current study, the following recommendations are suggested:

- Provide continuous education and training for parents regarding caring for children with herpes simplex.
- Encourage early seeking treatment to avoid further complications.
- Further study can be replicated in other settings using a large sample size to clinically verify the effectiveness of the educational program and generalize the results of the study.

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