

# Effect of Implementing a Time Management Skills Training Program on Nurses' Perceived Work Stress at King Salman Hospital, Saudi Arabia

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## ABSTRACT

**Background:** In the fast-paced and demanding healthcare environment, time management skills are crucial for staff nurses to maintain efficiency, provide high-quality patient care, and balance multiple responsibilities. Effective time management enables nurses to prioritize tasks and reduce occupational stress. **Aim:** To evaluate the effect of implementing a time management skills training program on nurses' perceived work stress at King Salman Hospital. **Method:** A quasi-experimental design was used; the study was conducted across all inpatient departments at King Salman Hospital, with 102 staff nurses, using four data- collection tools: Time Management Skills Knowledge Questionnaire, Time Management Skills Questionnaire, Attitude toward Time Management Skills, and Perceived Stress Scale. **Results:** Findings from the present study revealed substantial improvements in staff nurses' knowledge, practices, and attitudes regarding time management across the training program phases, as well as in total perceived stress. Confirmed that there was a statistically significant positive correlation between time management skills, knowledge, skills practices, attitudes, and similarly perceived work stress scores. **Conclusion:** Implementation of a time management skills training program was associated with improvements in staff nurses' time management knowledge, practices, attitudes, and perceived work stress across all phases. **Recommendations:** Integrating time management training programs into hospital education plans. Holding regular workshops and training sessions centered on time management skills.

**Keywords:** Attitude, Perceived Work Stress, Practice, Time Management Skills, Training Program

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## INTRODUCTION

Nurses are the backbone of any hospital or facility, and their contributions to patient care cannot be overstated. Direct nursing care requires a high level of nursing competence, empathy, and a relationship with the patient, as well as technical ability and communication skills (Werke & Weret, 2023). Nurses occupy a central position within healthcare systems, interacting extensively with patients, families, and other healthcare professionals. Effective communication is essential to their role in monitoring patients and fulfilling their professional duties (Kakemam, Albelbeisi, & Rouzbahani, 2024). To optimize their impact, it is imperative to provide nurses with the necessary working conditions. Despite their critical role, many nurses experience job stress, fatigue, and burnout, leading to higher turnover rates (Hajizadeh, Kakemam, Arab-Zozani, et al., 2025).

In the fast-paced, demanding healthcare environment, time management skills are crucial for staff nurses to maintain efficiency, deliver high-quality patient care, and balance multiple responsibilities. Effective time management enables nurses to prioritize tasks, reduce delays, and handle workloads systematically, ultimately improving overall job performance. In contrast, poor

time management can lead to disorganization, increased work pressure, and difficulty in meeting patient needs, contributing to heightened stress levels. As nursing requires constant multitasking and decision-making, mastering time management is essential for reducing burnout and ensuring a stable work environment (Korzynski & Protsiuk, 2024).

Time management is the process of planning and exercising conscious control of time spent on specific activities, especially to increase effectiveness, efficiency, and productivity. Time management skills refer to the ability to plan, organize, and prioritize tasks efficiently to maximize productivity and achieve goals within a given timeframe. These skills involve setting realistic deadlines, managing interruptions, delegating tasks, and maintaining focus while balancing multiple responsibilities. In nursing, time management is particularly critical as nurses must juggle patient care, administrative duties, and emergency situations without compromising quality (Khalasi, Heidari, Norouzadeh, & Haghani, 2022).

Effective time management in nursing leads to better patient outcomes, reduced stress, and increased job satisfaction. When nurses can manage their time

effectively, they experience less burnout, improved efficiency, and a sense of control over their workload. Proper time management also allows nurses to allocate sufficient time for patient-centered care, ensuring that each patient receives adequate attention and high-quality treatment. Additionally, it enhances teamwork, minimizes delays in care, and fosters a more organized and less chaotic work environment (Filomeno, Kannan, Al-Maqableh et al., 2023).

There are several factors that impact a nurse's ability to manage time effectively, including workload and staffing levels, organizational support, individual skills and experience, technology and resources, interruptions and unplanned events, and stress and fatigue. High patient-nurse ratios can make time management challenging, availability of structured workflows, clear policies, and managerial support influence time efficiency, more experienced nurses tend to manage their time better due to familiarity with tasks and prioritization strategies, help streamline documentation and time allocation, and emergency situations, frequent patient calls, and administrative interruptions can disrupt time management (Vizeshfar, Rakhshan, Shirazi, & Dokoohaki, 2022).

Time management skills and nurses' perceived work stress are closely linked. Poor time management can lead to increased workload pressure, missed deadlines, and a sense of being overwhelmed, significantly raising stress levels. Nurses who struggle with time management may find it difficult to complete essential tasks efficiently, leading to frustration, anxiety, and burnout. On the other hand, nurses who excel at time management experience lower stress levels, greater job satisfaction, and a greater sense of control over their responsibilities (Aberhe, Mariye, Bahrey, et al., 2024).

. By implementing effective time management strategies, such as prioritization, delegation, and structured scheduling, nurses can reduce perceived stress, improve work-life balance, and enhance overall well-being. Hospitals and healthcare institutions can also support nurses by providing training, adequate staffing, and technological support to optimize time management and create a healthier work environment (Khalasi, Heidari, Norouzadeh, & Haghani, 2022).

When nurses have strong time management skills, they are more likely to take the initiative, make confident decisions, and effectively handle job demands, further reducing stress and enhancing job satisfaction (Okonkwo & Olannye, 2025). Work stress refers to the physical, emotional, and psychological strain experienced due to the demanding nature of the nursing profession. It arises when the demands of the job exceed the nurse's ability to cope, leading to feelings of exhaustion, frustration, and mental fatigue. Work stress can stem from excessive workload, emotional strain from patient care, long shifts, and the high-pressure environment of healthcare settings. If left unmanaged, it can result in burnout, job dissatisfaction, and a decline in the quality of patient care (Khalasi, Heidari, Norouzadeh, & Haghani, 2022; Aberhe, Mariye, Bahrey, et al., 2024). Recognizing and addressing work stress in nursing is crucial for maintaining a healthy, motivated, and efficient

workforce. High levels of stress can negatively impact job performance, patient safety, and overall well-being. If nurses are continuously stressed, it can lead to higher turnover rates, absenteeism, and reduced engagement in their work. Understanding the causes and effects of work stress helps healthcare organizations implement strategies to improve working conditions, support mental health, and enhance job satisfaction among nurses (Rasheed, Bakhsh, Alhameedi, et al., 2024).

Several factors, including heavy workloads, long shifts, and emotional strain, contribute to stress, underscoring the need for healthcare institutions to implement effective stress management strategies. Work stress in nursing also arises from various factors, including high patient acuity, understaffing, administrative burdens, and emotional demands. Chronic stress can lead to physical and mental health issues, such as fatigue, anxiety, and depression, as well as decreased job performance. Addressing work stress is crucial for maintaining a healthy nursing workforce and ensuring high-quality patient care (Razzaq, Mehnaz, Afzal, Hussain, & Sher, 2025).

Work stress not only impacts nurses physically but also has severe emotional and psychological consequences (Bolado, Ataro, Gadabo, et al., 2024). Persistent stress can lead to anxiety, depression, irritability, and difficulty concentrating. It also affects motivation, job engagement, and overall work satisfaction. Many nurses experiencing high stress levels may withdraw from workplace interactions, develop negative attitudes toward their jobs, or struggle to maintain compassion toward patients. High stress among nurses directly impacts patient care and safety. Stressed nurses are more likely to make medical errors, miscommunicate with colleagues, and experience fatigue-related cognitive decline (Rondhianto, Siswoyo, & Siswoyozalsabila, 2024).

Nurses who experience constant stress, lack of autonomy, and limited managerial support often feel undervalued and unable to contribute meaningfully to patient care. This can result in lower job satisfaction, reduced motivation, and an increased likelihood of leaving the profession. Nurses who feel supported tend to have higher confidence, better decision-making abilities, and a stronger sense of job control, which helps them manage stress more effectively. When nurses believe in their competence, have autonomy in their roles, and feel supported by their leaders, they are more likely to cope with workplace challenges in a positive and proactive manner (Lykins, Seroka, Mayor et al., 2024).

To mitigate stress, nurses can adopt various coping strategies, such as practicing self-care, engaging in physical activities, seeking emotional support, and using stress management techniques such as mindfulness and relaxation exercises. Healthcare institutions can support nurses by providing stress management training, offering psychological counseling, and creating a supportive work environment that promotes mental well-being. High levels of stress can weaken a nurse's sense of empowerment, leading to feelings of helplessness, frustration, and disengagement (Vallone & Zurlo, 2024).

### Significance of the Study

Time management skills are acknowledged as important, but there has been little empirical research on this topic among staff nurses (Sabilla & Almanfaluthi, 2025). The significance of this study lies in its potential to provide evidence-based insights to support the well-being and empowerment of staff nurses, ultimately contributing to improved patient care and the overall resilience of the nursing workforce. By addressing work-related stress among staff nurses who often face significant workloads, competing demands, and high-stress environments, where unmanaged stress can lead to burnout, job dissatisfaction, and reduced quality of care (Holili, Shafa, Widat, et al., 2024).

Effective time management skills have been shown to significantly reduce occupational stress among nurses. Interventions, such as time management training, help nurses prioritize tasks, manage workloads efficiently, and eliminate unnecessary activities, which are critical in high-pressure environments like hospitals. Poor time management is linked to anxiety, burnout, and job dissatisfaction. By equipping nurses with these skills, organizations can mitigate burnout and its associated negative effects on patient care and staff retention (Alhasani & Orji, 2024).

Nursing is a high-stress profession characterized by demanding workloads, long hours, and emotionally charged situations. Work stress among nurses can lead to burnout, reduced job satisfaction, and compromised patient care. Time management skills are essential for nurses to prioritize tasks, manage their responsibilities effectively, and reduce stress. Implementing a time management skills training program can equip nurses with strategies to handle their workloads more efficiently, thereby alleviating perceived work stress (Ravari, Farokhzadian, Nematollahi, Miri, & Foroughameri, 2020). So, the present study aimed to evaluate the effect of implementing a time management skills training program on nurses' perceived work stress at King Salman Hospital.

### Aim of the Study

The study aimed to evaluate the effect of implementing a time management skills training program on nurses' perceived work stress at King Salman Hospital.

### Research Hypothesis

The specific research hypotheses are:

H1. Staff nurses' knowledge of time management improves after implementing a time management training program.

H2. Staff nurses' practices and attitudes regarding time management skills improve after implementing a time management skills training program.

H3. Staff nurses' perceived work stress reduces after implementing a time management skills training program.

### Method

#### Research design

A quasi-experimental design with a one-group pretest-posttest was used in the current study.

#### Setting

This study was conducted across all inpatient departments at King Salman Hospital, the primary hospital in the Hail region. The hospital features a 500-bed capacity. It also offers outstanding added value and a qualitative shift in health services across the Kingdom, in general, and in Hail in particular. The hospital included several specialized sections and clinics across different medical specialties. This medical edifice comprises 4 floors and 55 clinics across 48 specialties, including oncology, cardiology, obesity, neurology, kidney disease, etc. It also includes ICU, burn, endoscopy, surgery, one-day surgery, physiotherapy, in addition to specialized and support service sections.

#### Participants

A convenience sample was utilized, which includes available staff nurses (n=102) who are responsible for providing patient care in all inpatient units who fulfil the criteria of having a minimum of one year of experience and are available at the time of data collection.

#### Tools of data collection:

Four tools were used for data collection in the present study, namely, the Time Management Skills Knowledge Questionnaire, the

Time Management Skills Questionnaire, the Attitude toward Time Management Skills, and the Perceived Stress Scale (PSS-10).

#### Tool (I): Time Management Skills Knowledge Questionnaire

This tool was developed by the researcher based on a relevant literature review (Abdumusaevna, 2023; Wilson, Joiner, & Abbasi, 2021). It consists of two parts:

**The first part: identifying the personal characteristics** of the study participants, such as age, gender, marital status, qualifications, and years of experience in the current position. The second part assessed participants' knowledge of time management as a basic concept, time waste management, time wasters management, and time management strategies, etc. It consisted of 15 statements in multiple-choice and true-or-false formats. Each statement response was considered as (1) for the right answer and (zero) for the wrong answer.

The scoring system of the time management skills knowledge questionnaire was classified into three levels based on a predetermined cut-off point (<60%), as follows:

Poor level of knowledge (<60% of the total score)

Average level of knowledge (60%<75% of the total score)

Good level of knowledge ( $\geq 75\%$  of the total score)

#### Tool (II): Self-Administered Time Management Skills Practice Questionnaire:

It was developed by the researcher after reviewing the literature (Alay & Kocak, 2002; Macan, 1994) to determine staff nurses' practice of time management skills. It consisted of 32 items and was divided into 4 dimensions as follows: Planning, goal setting & prioritizing (8 items), organizing (15 items), scheduling (6 items), and controlling (3 items) with a 5-point Likert scale ranging from: (always=1, infrequently = 2, sometimes =3, frequently =4, usually =5).

The scoring system of the self-administered time management skills practice questionnaire was classified into three levels based on a predetermined cut-off point (<50%), as follows:

Low level of time management skills practice (<50%).  
Moderate level of time management skills practice (50%-75%).

High level of time management skills practice (>75%).

**Tool (III): Staff Nurses' Attitude for Time Management Skills**  
It was developed by Adamu & Bako (2023) to explore nursing students' attitudes toward time management and was modified by the researcher to assess study participants' attitudes toward time management skills. It includes 14 items and is categorized into two dimensions, namely cognitive attitude towards time management (6 items) and behavioral attitude towards time management (8 items). Five Likert scale responses ranged from strongly disagree (1 to 5 strongly agree).

The scoring system of staff nurses' attitude for time management skills was classified into three levels based on a predetermined cut-off point (<50%), as follows:

Low level of attitude for time management skills (<50%).  
Moderate level of attitude for time management skills (50%-75%).

High level of attitude for time management skills (>75%).

**Tool (IV): Perceived Stress Scale (PSS-10).**

It was developed by Cohen, Kamarck, & Mermelstein (1983) to identify the level of perceived stress among helping professionals. This questionnaire is the most widely used psychological instrument for measuring perceptions of the cognitive aspects of stress and coping and for appraising the effectiveness of coping strategies. The PSS-10 is a self-report psychometric instrument designed to measure the level of perceived stress in terms of unpredictability, lack of control, and overload. Respondents are asked to indicate the frequency of their feelings and thoughts during the last month using a 5-point Likert scale ranging from 1=never to 5=very often. The scoring system of the Perceived Stress Scale was classified into three levels based on a predetermined cut-off point (<50%), as follows:

Low level of perceived stress (<50%).

Moderate level of perceived stress (50%-75%).

High level of perceived stress (>75%).

**Validity and reliability**

**Validity** was established for face and content validity; a panel of five expertise in the field of Nursing Administration, who revised the tools after translation into Arabic for clarity, relevancy, applicability, comprehensiveness, understanding and ease for implementation also evaluate the entire instrument as being relevant and appropriate to test what it wanted to measure, and according to their opinions and the necessary modifications were done. **Reliability** test of the study tools, Time Management Skills Knowledge Questionnaire, Self-Administered Time Management Skills Practice Questionnaire, Staff Nurses' Attitude for Time Management Skills Questionnaire, and Perceived Stress Scale, by using the Cronbach alpha test, was computed and found to be (0.801), (0.813), (0.786), and (0.817), respectively.

**Pilot study:**

A pilot study was conducted before performing the main study and before beginning data collection. Pilot study was carried out on 10 staff nurses on (10% of the total study sample) selected randomly to check and ensure the

clarity and applicability of the tools in addition to identify obstacles and problems that may be encountered during data collection, test clearness of the language and calculated the duration required to determine the time needed to fill-in questions. Participants in the pilot study were not included in the research.

**Ethical Considerations:**

Ethical approval was obtained from the Research Ethical Committee of the Faculty of Nursing, Mansoura University. Official permission to conduct the study was obtained from the hospital's administrator. All participants were informed that their participation was voluntary, and they had the right to withdraw from the study at any time. All participants were assured of the confidentiality of the collected data, and the privacy of the study sample was maintained throughout the study. **Written**

**informed consent** was obtained from participants who agreed to participate in the study after the nature and aim of the study were explained.

**Data Collection:**

The whole data collection was carried out in 6 months, from the beginning of January 2024 to the end of June 2025. The design of a training program that lasted around two months, from March to the end of April. An official permission was issued by the Faculty of Nursing, Mansoura University, to carry out the study. An official letter was issued with approval from the director of King Salman Hospital in Hail after an explanation of the purpose of the study and the schedule of data collection. The researcher met with the participants to explain the aim of the study and obtain their consent to participate. The time management skills knowledge questionnaire, time management skill questionnaire, attitude toward time management skills, and perceived stress were distributed to staff nurses according to a predetermined unit schedule. The researcher will present all data collection times to clarify the tools distributed to nurses. The data collected during this phase served as the study's pretest. Based on the collected data and a literature review, the researcher will design a training program on time management skills for staff nurses.

A time management skills training program was implemented; the staff nurses were divided into small groups. Each group consists of a number of staff nurses, based on availability and workload, to conduct the training. The program lasts 4 weeks, with 4 sessions per week; each session lasts 1 hour for each group in the studied sample. The researcher implemented the program with one group during the day using various teaching methods, such as lectures, group discussion, and role-play. Instructional media included video, demonstration, data show, brochure, and program booklet prepared by the researcher and distributed to the study group. The researcher created a program booklet that was provided to all participants on the first day as educational media. Immediately after completion of the training program, the four data collection tools (Time management skills knowledge questionnaire, time management skills questionnaire, attitude toward time management skills, and perceived stress) were distributed to the participants. The researcher began to

follow up on the proposed progress after the training program by comparing post-test results with baseline findings from the pretest assessment, using the same four data collection tools. The questionnaire took 25-30 minutes to finish. Data is gathered 3 days/week during the morning and afternoon shifts.

**Data Analysis**

The collected data were coded, entered, tabulated, and analyzed using SPSS (Statistical Package for Social Science) version 25 (IBM Corporation, Armonk, NY, USA). For quantitative data, the range, mean, and standard deviation were calculated. For qualitative data, which describes a categorical set of data by frequency, percentage, or proportion for each category, comparisons between two groups and beyond were done using the Chi-square test (χ<sup>2</sup>). For comparison between means of three related groups (pretest, immediate post-test, and after three months of follow-up post implementing a Time Management Skills Training Program) of non-parametric data, the Friedman test was used and the calculation of the (χ<sup>2</sup>) value. For comparing the means of two independent groups with nonparametric data, the Mann-Whitney U test was used. For comparison between more than two means of non-parametric data, the Kruskal-Wallis (K) value was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r).

**Results**

**Table 1** illustrates personal characteristics of the studied nurses at King Salman Hospital, Saudi Arabia. According to this table, (79.4%) of the studied nurses had an age range from 30 to less than 40 years old, with a mean score of 32.54±5.28, the majority of them (76.5%) were female, and most of the studied nurses (89.2%) were married. Concerning the studied nurses' educational level (80.4%) had a technical institute of nursing, nearly half of them (45.1%) had less than 5 to 10 years of experience, with a mean score of 9.05±2.37, and more than half of them (63.7%) were attending a training program.

**Figure 1** illustrates the level of knowledge of the studied nurses regarding time management across the training program phases at King Salman Hospital. There was a statistically significant improvement in nurses' knowledge level about time management across the training program phases. In the pretest phase, nurses' knowledge was at a high level (57.8%), then improved in the immediately posttest and after 3 months follow-up test phases (92.2%) and (93.1%) respectively at a high level.

**Figure 2** illustrates the total level of time management skills practice through the training program phases at King Salman Hospital. There was a statistically significant improvement in nurses' overall time management skills practice across the training program phases. It showed that the highest total level score (71.6%) had a low level of nurses' skills at the pretest phase, then reduced to (29.4%) at the immediate post-test phase, and then (52.9%) in the 3-month follow-up test phase.

**Figure 3** illustrates the total response of the studied staff nurses about their attitudes toward time management skills through training program phases at King Salman Hospital. There was a statistically significant

improvement in nurses' responses regarding attitudes toward time management skills across the training program phases. It showed that the highest total percent (33.3%) reported strongly agree in the immediate posttest phase of nurses' responses regarding total attitude toward time management skills.

**Figure 4** illustrates the level of total attitude toward time management skills across the training program phases at King Salman Hospital. There was a statistically significant improvement in nurses' overall attitude toward time management skills across the training program phases. It showed that the highest total level score (60.8%) had a low level of nurses' attitude for time management skills at the pretest phase, then reduced to (38.2%) at the immediate post-test phase, and then (54.5%) in the 3-month follow-up test phase.

**Figure 5** illustrates the level of total perceived work stress through training program phases at King Salman Hospital. There was a statistically significant improvement in nurses' level of total perceived work stress across the training program phases. It showed that the highest total level score (27.5%) had a high level of nurses' level of perceived work stress at the pretest phase, then reduced to (0.0%) at the immediate post-test phase and in the 3-month follow-up test phase.

**Table 2** displays the correlation between total scores of time management skills knowledge and self-administered time management skills practice, attitude toward time management skills, and perceived work stress of the studied staff nurses at King Salman Hospital, Saudi Arabia, pre- and post-training program. The findings revealed a highly statistically significant total score for time management skills, knowledge, and self-administered time management skills practice across all phases (pre: r=0.639; post: r=0.738; follow-up: r=0.725; p<0.001). And with attitude for time management skills (pre: r=0.684, post: r=0.497, follow-up: r=0.456; p<0.001) and similarly perceived work stress scores (pre: r=0.699, post: r=0.604, follow-up: r=0.428; p<0.001).

**Table (1): Personal characteristics of the studied nurses at King Salman Hospital, Saudi Arabia (n=102)**

Characteristics	No	%
<b>Age in years</b>		
20-<30	19	18.6
30-<40	81	79.4
>40	2	2.0
<b>Mean ±SD</b>	<b>32.54±5.28</b>	<b>32.54±5.28</b>
<b>Gender</b>		
Male	24	23.5
Female	78	76.5

Years of experience		
< 1	3	2.9
1-5	16	15.7
>5-10	46	45.1
>10	37	36.3
<b>Mean ±SD</b>	<b>11.46±1.96</b>	<b>11.46±1.96</b>
Educational level		
Diploma of Technical Institute Degree	16	15.7
Technical Institute of Nursing	82	80.4
Bachelor of Nursing Science Degree	4	3.9
Marital status		
Single	8	7.8
Married	91	89.2
Divorced	3	2.9
Presence of previous training		
Yes	65	63.7
No	37	36.3

Figure (1): Total knowledge level of the studied nurses about time management through training program phases at King Salman Hospital (n=102).

Figure (2): Total level of time management skills practice of the studied nurses through training program phases at King Salman Hospital (n=102).

Figure (3): Total response of the studied staff nurses about attitude for time management skills through training program phases at King Salman Hospital (n=102).

Figure (4): Level of total Attitude for Time Management Skills of the studied nurses through training program phases at King Salman Hospital (n=102).

Figure (5): Level of total Perceived Work Stress by the studied nurses through training program phases at King Salman Hospital (n=102).

Table (2): Correlation between total scores of Time Management Skills knowledge, practice, attitude, and

perceived work stress of the studied staff nurses at King Salman Hospital.

Variables	Total time management skills knowledge by the studied staff nurses through program phases	Total time management skills knowledge by the studied staff nurses through program phases	Total time management skills knowledge by the studied staff nurses through program phases	Total time management skills knowledge by the studied staff nurses through program phases	Total time management skills knowledge by the studied staff nurses through program phases	Total time management skills knowledge by the studied staff nurses through program phases
	Pretest	Pretest	Immediate posttest	Immediate posttest	Follow up	
	r	p value	r	p value	r	
Practice of time management skills	-0.639	0.0001*	0.738	0.0001*	0.725	0.000
Attitude of time management skills	0.684	0.0001*	0.497	0.0001*	0.456	0.000
Perceived work stress	-0.699	0.0001*	-0.604	0.0001*	-0.428	0.000

\*Statistically significant (P<0.05) r=Correlation Coefficient

### DISCUSSION

In fast-paced clinical environments, inadequate time management can lead to feelings of overwhelm, rushing, or being constantly behind schedule, elevating stress levels and contributing to emotional exhaustion. Conversely, effective time management helps nurses allocate their energy and attention more strategically, reducing chaos and fostering a sense of control and balance in their workday. When nurses manage their time efficiently, they can better anticipate challenges, handle emergencies with confidence, and maintain focus on patient-centered care. Thus, time management acts as a protective factor that buffers against the psychological strain commonly experienced in nursing roles (Lin et al., 2025). Therefore, this study aimed to evaluate the effectiveness of implementing a time management skills

training program on nurses' perceived work stress at King Salman Hospital.

Nurses who possess adequate knowledge of time management recognize the value of prioritizing tasks based on urgency and importance, setting realistic goals, and avoiding procrastination. This knowledge enables them to plan their shifts efficiently, allocate time for direct patient care, documentation, and collaboration with healthcare teams, while also maintaining time for rest and self-care. Moreover, knowledgeable nurses understand that efficient time management not only enhances productivity but also reduces stress and prevents burnout. Such awareness fosters a proactive approach to workload management, improves decision-making, and ensures that high standards of patient care are consistently achieved. Ultimately, the depth of nurses' knowledge about time management serves as a foundation for both personal effectiveness and organizational efficiency in healthcare settings (Lin et al., 2025).

The current study revealed a clear improvement in nurses' time management knowledge across the different phases of the training program at King Salman Hospital. Findings indicated that, prior to the intervention, many nurses had a limited understanding of the principles of effective time management. However, following the training, there was a marked improvement in their knowledge, reflecting the positive impact of the educational program. This improvement was maintained over time, as nurses continued to demonstrate a strong grasp of time management concepts during the follow-up assessment. Overall, the results suggest that the training program was effective in enhancing and sustaining nurses' knowledge regarding time management practices.

This may be related to the fact that the training program provided nurses with structured guidance and practical strategies to enhance their understanding of time management principles and their application in clinical practice. The interactive nature of

the sessions, along with real-life examples and opportunities for reflection, likely contributed to deeper learning and retention of knowledge. Moreover, the program may have increased nurses' awareness of the importance of time management in improving patient care efficiency, reducing work stress, and enhancing overall job performance. Continuous reinforcement through follow-up and supportive supervision might also have helped sustain the knowledge gained over time.

The current findings are supported by Vizeshfar, Rakhshan, Shirazi, & Dokoohaki (2022), who reported that time management education significantly improved critical care nurses' ability to prioritize tasks and organize their workflow effectively. Their randomized clinical trial showed that after structured time management training, nurses demonstrated improved decision-making and prioritization skills, resulting in more efficient clinical performance. This aligns with the present results, which revealed that the educational intervention led to a noticeable improvement in nurses'

knowledge and understanding of time management principles. They emphasized that well-designed and well-implemented training programs are instrumental in developing nurses' cognitive and practical competencies in time utilization and task organization.

Time management skills practice concerns the ability of nurses to effectively apply strategies for organizing, prioritizing, and completing tasks within the demands of their clinical environment. It involves not only understanding the principles of time management but also implementing them in daily routines, such as scheduling patient care, managing documentation, coordinating with colleagues, and responding to emergencies. Effective practice of these skills enables nurses to optimize workflow, reduce work-related stress, and enhance the quality and efficiency of patient care. Moreover, consistent application of time management strategies promotes professional competence, job satisfaction, and a sense of control over clinical responsibilities, ultimately contributing to both personal well-being and organizational performance in healthcare settings (Olorunfemi & Chika, 2024).

The current study found a statistically significant improvement in total time management skills throughout the program. During the pretest phase, a considerable proportion of nurses demonstrated low skill levels. This proportion decreased substantially in the immediate posttest phase, reflecting the positive impact of the training.

This may be related to the fact that the training program provided nurses with structured guidance, practical exercises, and real-life scenarios that facilitated the application of time management principles in their daily practice. The interactive nature of the sessions likely helped nurses understand how to prioritize tasks, organize workloads, and manage clinical responsibilities more efficiently. Additionally, the immediate improvement observed after the program suggests that the content was relevant, engaging, and easily transferable to their work environment.

In alignment with the present findings, Çingöl and Karakas (2023) conducted a study on the effect of management in nursing courses on students' time management and career planning attitudes and found that nursing students exhibited significant progress in overall time planning and management practices. This result indicates that nursing course management improves nursing students' time management skills. Therefore, it is crucial to teach appropriate time management skills during nursing education. Furthermore, these skills are important for helping students to shape their personal and professional lives as well as to improve their nursing skills during nursing education.

Again, the current study's findings revealed that improving nurses' time management skills after implementing a training program. According to Addis, Gelaw, Eyowas, Bogale, Aynalem, and Guadie (2023), the magnitude of good time management practice among health professionals was found to be high. However, this finding is lower than that of a study conducted in Egypt, where health professionals practiced good time management (Khalifa, Abdelrahman, Fahmy, & Gabra,

2021). The disparity could be attributed to differences in socio-demographic characteristics, sample sizes, and study settings.

Nurses' attitude toward time management skills concerns their perceptions, beliefs, and motivation regarding the importance and application of effective time management in clinical practice. A positive attitude enables nurses to recognize the value of organizing, prioritizing, and allocating time efficiently, thereby enhancing productivity, reducing work-related stress, and improving patient care outcomes. Nurses who hold a favorable attitude toward time management are more likely to adopt and consistently apply strategies that optimize their workflow, coordinate tasks effectively, and manage competing demands (Moneva & Pedrano, 2019).

The current results revealed that a statistically significant improvement was observed in the total level of attitude toward time management skills throughout the program. During the pretest phase, a considerable proportion of nurses demonstrated low skill levels. This proportion decreased substantially in the immediate posttest phase, reflecting the positive impact of the training. This may be related to the fact that the training program not only provided theoretical knowledge and practical strategies for time management but also emphasized the value and benefits of adopting effective time management practices in daily nursing work. Through engaging nurses in discussions, reflective exercises, and real-life clinical scenarios, the program likely influenced their perceptions and beliefs, fostering a more positive attitude toward managing their time efficiently.

Additionally, the immediate improvement observed after the training suggests that nurses were motivated and encouraged to apply these principles.

The current findings are supported by Filomeno et al. (2024), who assessed nurses' and managers' time management skills and reported that nurses' time management abilities improved significantly when structured assessments and organizational support mechanisms were applied, reinforcing the idea that skills can be strengthened through targeted interventions. In alignment with Sadeghi et al. (2024), who studied the role of time management skills in nursing in exploring self-directed learning readiness and related factors, the present improvement in nurses' attitudes mirrors their conclusion that enhanced time management skills are closely linked to readiness for self-directed learning and can be positively developed through educational exposure.

Along with Zyoud (2023), who identified that training and workplace-related factors strongly influence time management competency, the current results confirm that guided programs can elevate nurses' skill levels beyond their baseline. As well as Yimer et al. (2023), who studied the assessment of magnitude and associated factors of attitude towards time management among health professionals working in public hospitals of Dessie City, Northeast Ethiopia, found that attitude toward time management significantly increased among health professionals receiving structured awareness and

skill-building support, the current study also demonstrates a clear post-intervention enhancement.

Additionally, the results align with Wilson et al. (2021), who emphasized that systematic time management training contributes meaningfully to performance improvement, substantiating the observed gains in nurses' attitudes across the program. Finally, across all referenced studies, the evidence consistently supports the present finding that time management skills are modifiable, responsive to educational interventions, and essential for strengthening professional performance.

Perceived work stress among nurses refers to the subjective experience of pressure, tension, or strain resulting from the demands and challenges of their professional responsibilities. It encompasses both the emotional and physical responses to factors such as heavy workloads, time pressures, patient care complexity, role conflicts, and interpersonal challenges within healthcare settings. High levels of perceived work stress can negatively affect nurses' mental and physical well-being, job satisfaction, and the quality of patient care they provide (Razzaq et al., 2025).

Managing time effectively can benefit both personal life and organization. It improves the ability to complete tasks, make smarter decisions, and achieve complete control over essential priorities (Kashyap, 2022). Poor time management, on the other hand, has been linked to poor job quality, low productivity, negative career impacts, and high levels of stress. Similarly, health professionals with poor time management skills frequently work overtime to complete their tasks. As a result, they have less personal and family time, causing more stress. It can also make them more exhausted, cause burnout, and negatively affect their health (Trafft, 2021). The current results illustrate the overall level of nurses' perceived work stress across the training program phases at King Salman Hospital. A statistically significant reduction in total perceived work stress was observed throughout the program. During the pretest phase, a notable proportion of nurses reported a high level of work stress. This proportion decreased substantially in the immediate posttest phase and remained minimal during the three-month follow-up.

The current findings are supported by Sesen & Ertan (2022), who studied the effect of employee-perceived training on job satisfaction: the mediating role of workplace stress. They demonstrated that employee training programs significantly reduced workplace stress while simultaneously improving job satisfaction. Their findings highlight that structured training enhances employees' coping abilities and confidence in handling work-related challenges, thereby lowering perceived stress levels.

In align with Alsufyani, Aboshaiqah, Alshehri, & Alsufyani, (2022) who studied impact of emotional intelligence on work performance: The mediating role of occupational stress among nurses, the current results affirm that personal development programs and emotional regulation skills substantially mitigate occupational stress among nurses and found that emotional intelligence training indirectly enhanced work

performance by reducing stress and improving interpersonal relationships.

Along with Abdollahi, Taheri, & Allen (2021), who studied perceived stress, self-compassion, and job burnout in nurses: the moderating role of self-compassion, who reported that self-compassion and stress management interventions significantly lowered perceived stress and burnout among nurses, the present findings emphasize the critical role of psychological support

and education in promoting resilience. Abdollahi's study indicated that training aimed at enhancing emotional awareness and coping mechanisms effectively decreased stress levels.

The findings demonstrated a strong positive correlation between nurses' time management knowledge and their self-administered skills practice across all phases of the training program. This indicates that nurses with greater knowledge of time management were more likely to effectively apply these skills in their daily practice. This may be related to the fact that nurses who understand the principles and strategies of time management are better equipped to apply them effectively in their daily clinical tasks. Knowledge provides the foundation for practical implementation, enabling nurses to organize, prioritize, and complete their responsibilities efficiently.

In alignment with the current study's findings, Zyoud (2023) studied factors influencing time management skills among nurses in Northwest Palestine, found that higher time-management skills were associated with better psychological well-being and reduced stress; training and workplace factors predicted improvements.

As well as Sadeghi, Janatolamkn, Rezaeian, Rashi, & Khatony (2024), who studied self-directed learning readiness & role of time management in nursing and showed that time-management readiness predicts better coping and reduced perceived stress in nurses, and that this supports the mediating role of knowledge and attitude.

Filomeno et al. (2024) assessed nurses' and managers' time management skills in a national survey in Italy and found that structured assessment/education and organizational support are associated with improved time management attitudes and lower reported time pressure. A quasi-experimental study examined the effect of time management education in critical care on emergency nurses (2021) and found improved time-management knowledge/skills and downstream benefits (efficiency, perceived control) after workshops, suggesting likely stress reduction as an outcome.

As well as Liuyu Sun et al. (2021), a longer intervention (multi-week) combining time management with reflective/group work showed significant decreases in work-stress reactions, supporting that comprehensive programs reduce stress. Recent reviews & conceptual work conclude that effective time management is linked to reduced time pressure, improved decision-making, and reduced burnout risk for nurses and managers. These syntheses substantiate the positive relationship in multiple contexts.

In alignment with the current study's findings, Amin et al. (2025) studied the transforming nursing education: the

power of educational leadership in optimizing time management and competency, finding that greater time-management knowledge among nurses is associated with more effective self-administered skill practice across training phases. The literature offers several complementary perspectives. Similarly, previous investigations have documented connections between time-management constructions and nursing competencies and behaviors. For example, this study resonates with Transforming nursing education: the power of educational leadership in optimizing time management and competency, which found that nursing students' time-management skills were positively correlated with their competence and that educational leadership mediated this relationship.

Moreover, beyond purely knowledge-skill relationships, other studies, such as Vizeshfar, Rakhshan, Shirazi, & Dokoohaki (2022), The effect of time management education on critical care nurses' prioritization: a randomized clinical trial, have suggested that improved time-management training leads to enhanced prioritization and workflow behaviors. For instance, a randomized clinical trial on critical-care nurses' time-management education found significant improvements in time-management scores.

As Zyoud (2023) found that nurses who attended time-management courses had significantly better time-management scores, this is a prerequisite for improved skill. This supports the notion that knowledge of time-management strategies enhances the ability to apply them in real settings.

Additionally, an investigation into head nurses' time management skills and their caring behavior by El-Ashry, El-Sayed, & Abou Ramadon (2022) studied the head nurses' time management skills for the provision of caring to staff nurses, found a statistically significant positive correlation (i.e., time-management skills, caring behavior) in a descriptive correlational design. This suggests that time-management competence (which implies knowledge & skill) is linked not only to technical tasks but also to interpersonal caring actions. In the context of the current study, this insight provides further support for the idea that nurses who know how to manage time are better positioned to engage in meaningful behaviors (self-administered skills) that contribute to care.

A positive relationship was also observed between nurses' time management knowledge and their attitudes toward time management skills. Nurses with higher knowledge tended to have more favorable attitudes toward applying time management principles, although the strength of this association appeared to decrease slightly over time. This may be explained by the idea that greater knowledge enhances awareness of the benefits of effective time management. Nurses who recognize the importance of organizing and prioritizing their work are more likely to develop a positive mindset and motivation toward consistently applying these skills. This aligns with the idea that knowledge not only shapes behavior but also fosters attitudinal readiness for the application of professional skills.

Similarly, a study by Hassan & Mohamed (2023) found that nurses with greater time management knowledge exhibited significantly more positive attitudes toward organizing and prioritizing their tasks, suggesting a cognitive-affective link between understanding and valuing time management principles. The authors noted that knowledge-based interventions increased both perceived control and satisfaction with workflow, strengthening positive attitudes toward time use.

Beside this, Vizeshfar, Rakhshan, Shirazi, & Dokoohaki, (2022) studied the effect of time management education on critical care nurses' prioritization: a randomized clinical trial reported that Turkish nursing students who received structured time management training not only improved in skill performance but also showed enhanced attitudes and motivation toward maintaining organized work habits (These results mirror the pattern found in the present study, where greater knowledge heightened awareness of benefits, thereby reinforcing positive attitudes.

Along with these findings, Mohamed & El-Sayed (2021) highlighted that nurses' knowledge of self-management and goal setting directly predicted their attitudes toward prioritizing and delegating tasks effectively. The researchers concluded that a theoretical understanding of time allocation fosters an intrinsic appreciation of its value, leading to sustained positive attitudes over time.

## CONCLUSION

Based on the study findings, the implemented time management training program resulted in a statistically significant improvement in nurses' knowledge, practice, and attitude regarding time management skills. Additionally, there was a statistically significant improvement in nurses' level of total perceived work stress across the training program phases. Moreover, there was a statistically significant correlation between total scores of time management skills, knowledge with practice, attitude, and perceived work stress across all phases.

Recommendations For staff nurses

Enhancing personal time management skills through daily planning and prioritization of tasks.

Applying learned time management strategies consistently during clinical practice.

Practicing self-monitoring to identify time-wasting activities and improve efficiency.

Utilizing stress-management techniques to cope with workload pressures.

Participating actively in time management training and professional development programs.

Adopting positive attitudes toward change and skill development in time management.

For head nurses

Supporting staff nurses in applying time management skills within clinical units.

Organizing work schedules to ensure fair workload distribution among nurses.

Monitoring nurses' performance and providing regular, constructive feedback.

Encouraging teamwork and effective communication to reduce time pressure.

Facilitating ongoing in-service education related to time management and stress reduction.

Identifying barriers that hinder effective time use within the unit.

- Promoting a supportive work environment that values efficiency and well-being.
- Modeling effective time management behaviors as role models for staff nurses.

For nursing directors

- Integrating time management training programs into hospital education plans.
- Providing adequate resources to support the effective implementation of training programs.
- Establishing policies that promote efficient work organization and reduce workload stress.
- Supporting a culture that values continuous professional development.
- Promoting interdisciplinary collaboration to improve workflow efficiency.
- Monitoring organizational outcomes related to nurses' performance and stress levels.

For future research

- Conducting longitudinal studies to assess the long-term impact of time management training.
- Exploring the relationship between time management skills and patients' and nurses' outcomes.
- Assessing the role of technology in enhancing nurses' time management practices.

Identifying factors influencing the sustainability of time management skills over time.

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