



**EVALUATING THE EFFECTIVENESS OF NURSING INTERVENTIONS AND  
PATIENT EDUCATION ON HEALTH OUTCOMES IN A RURAL HEALTH CENTER:  
A COLLABORATIVE APPROACH**

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***Abstract***

Nursing interventions and patient education play a crucial role in promoting health outcomes, particularly in rural health centers where access to healthcare resources may be limited. This study aimed to evaluate the effectiveness of nursing interventions and patient education on health



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outcomes in a rural health center in Hafar Al-Batin, Saudi Arabia, using a collaborative approach among nursing staff. A mixed-methods research design was employed, involving a retrospective analysis of patient records, a survey of nursing staff, and focus group discussions. The findings revealed that nursing interventions and patient education had a significant positive impact on health outcomes, including improved patient knowledge, adherence to treatment, and reduced hospital readmissions. The collaborative approach among nursing staff was found to be effective in enhancing the quality of care and patient satisfaction. The study highlights the importance of investing in nursing interventions and patient education in rural health centers and provides valuable insights for healthcare policy and practice in Saudi Arabia.

**Keywords:** nursing interventions, patient education, health outcomes, rural health center, collaborative approach

### **Introduction**

Nursing interventions and patient education are essential components of healthcare delivery, particularly in rural health centers where access to healthcare resources may be limited (Almalki et al., 2011). Nursing interventions refer to the actions taken by nurses to improve patient outcomes, while patient education involves providing patients with the knowledge and skills necessary to manage their health conditions effectively (Aldossary et al., 2008). Effective nursing interventions and patient education have been shown to improve health outcomes, reduce healthcare costs, and enhance patient satisfaction (Albatti et al., 2017; Aljohani et al., 2018).

In Saudi Arabia, there has been a growing emphasis on improving the quality of healthcare delivery in rural areas, where access to healthcare resources may be limited (Albejaidi, 2010). The Ministry of Health has implemented several initiatives to enhance the quality of care in rural health centers, including the deployment of mobile health clinics and the training of healthcare professionals (Almalki et al., 2011). However, there is limited research on the effectiveness of nursing interventions and patient education in rural health centers in Saudi Arabia, particularly from a collaborative perspective among nursing staff.

This study aimed to evaluate the effectiveness of nursing interventions and patient education on health outcomes in a rural health center in Hafar Al-Batin, Saudi Arabia, using a collaborative approach among nursing staff. The specific objectives were to:

1. Assess the impact of nursing interventions and patient education on patient knowledge, adherence to treatment, and health outcomes
2. Explore the experiences and perspectives of nursing staff regarding the effectiveness of nursing interventions and patient education
3. Examine the role of collaborative practice among nursing staff in enhancing the quality of care and patient satisfaction
4. Provide recommendations for improving nursing interventions and patient education in rural health centers in Saudi Arabia

### **Literature Review**

Nursing interventions and patient education have been widely recognized as essential components of healthcare delivery, particularly in rural health centers where access to healthcare resources may be limited (Almalki et al., 2011). Several studies have investigated the effectiveness of nursing interventions and patient education on health outcomes in various settings, including rural health centers.

A systematic review by Albatti et al. (2017) found that nursing interventions and patient education were effective in improving patient knowledge, adherence to treatment, and health outcomes in patients with chronic conditions such as diabetes, hypertension, and cardiovascular disease. The review highlighted the importance of tailoring nursing interventions and patient education to the specific needs and preferences of patients, as well as the importance of involving patients and their families in the care process.

Another study by Aljohani et al. (2018) investigated the impact of a nursing intervention program on the quality of life and self-care behaviors of patients with heart failure in a rural health center in Saudi Arabia. The study found that the nursing intervention program, which included patient education and counseling, resulted in significant improvements in patients' quality of life and self-care behaviors, as well as reduced hospital readmissions.

A qualitative study by Alshammari et al. (2019) explored the experiences and perspectives of nurses regarding the effectiveness of patient education in a rural health center in Saudi Arabia. The study found that nurses perceived patient education as an essential component of their role and that effective patient education required a collaborative approach among nursing staff, as well as the involvement of patients and their families in the care process.

Despite the growing evidence on the effectiveness of nursing interventions and patient education on health outcomes, there is limited research on the role of collaborative practice among nursing staff in enhancing the quality of care and patient satisfaction, particularly in rural health centers in Saudi Arabia. This study aimed to address this gap in the literature by examining the effectiveness of nursing interventions and patient education on health outcomes in a rural health center in Hafar Al-Batin, Saudi Arabia, using a collaborative approach among nursing staff.

## **Methodology**

### *Research Design*

A mixed-methods research design was employed to evaluate the effectiveness of nursing interventions and patient education on health outcomes in a rural health center in Hafar Al-Batin, Saudi Arabia. Mixed-methods research involves the collection and integration of both quantitative and qualitative data to provide a more comprehensive understanding of the research problem (Creswell & Plano Clark, 2017). In this study, a concurrent triangulation design was used, where quantitative and qualitative data were collected simultaneously and integrated during the interpretation phase (Creswell & Plano Clark, 2017).

### *Sample and Sampling Technique*

The study was conducted in a rural health center in Hafar Al-Batin, Saudi Arabia, which serves a population of approximately 10,000 people. A purposive sampling technique was used to recruit nursing staff who were involved in providing nursing interventions and patient education in the health center. Purposive sampling involves selecting participants based on specific criteria that are relevant to the research question (Palinkas et al., 2015). In this study, the inclusion criteria for nursing staff were: (1) being a registered nurse or nursing technician; (2) having at least one year of experience in providing nursing interventions and patient education in the health center; and (3) willingness to participate in the study.

A total of 20 nursing staff participated in the study, including 15 registered nurses and 5 nursing technicians. The sample size was determined based on data saturation, which occurs when no new themes or insights emerge from the data (Fusch & Ness, 2015).

### *Data Collection*

Data were collected using three methods: (1) a retrospective analysis of patient records; (2) a survey of nursing staff; and (3) focus group discussions with nursing staff.

1. Retrospective analysis of patient records: A retrospective analysis of patient records was conducted to assess the impact of nursing interventions and patient education on health outcomes. The analysis included a review of 100 patient records from the past six months, focusing on patients who had received nursing interventions and patient education for chronic conditions such as diabetes, hypertension, and cardiovascular disease. The following data were extracted from the patient records: demographic information, medical history, nursing interventions and patient education provided, adherence to treatment, and health outcomes (e.g., blood glucose levels, blood pressure, hospital readmissions).
2. Survey of nursing staff: A survey was conducted to explore the experiences and perspectives of nursing staff regarding the effectiveness of nursing interventions and patient education in the health center. The survey consisted of 20 items, including both closed-ended and open-ended questions. The closed-ended questions used a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to assess nursing staff's perceptions of the effectiveness of nursing interventions and patient education, as well as their satisfaction with the collaborative approach among nursing staff. The open-ended questions allowed nursing staff to provide more detailed responses and share their experiences and suggestions for improvement.
3. Focus group discussions: Two focus group discussions were conducted with nursing staff to gain a deeper understanding of their experiences and perspectives regarding the effectiveness of nursing interventions and patient education, as well as the role of collaborative practice in enhancing the quality of care and patient satisfaction. Each focus group consisted of 10 nursing staff and lasted approximately 60-90 minutes. The focus group discussions were conducted in Arabic and were audio-recorded and transcribed verbatim.

### *Data Analysis*

Quantitative data from the retrospective analysis of patient records and the survey of nursing staff were analyzed using descriptive and inferential statistics. Descriptive statistics (e.g., frequencies, percentages, means, standard deviations) were used to summarize the demographic and clinical characteristics of the patients and the responses of nursing staff to the survey. Inferential statistics (e.g., t-tests, chi-square tests) were used to examine the relationships between nursing interventions and patient education and health outcomes, as well as the differences in nursing staff's perceptions based on their demographic and professional characteristics.

Qualitative data from the open-ended survey questions and the focus group discussions were analyzed using thematic analysis, which involves identifying, analyzing, and reporting patterns or themes within the data (Braun & Clarke, 2006). The thematic analysis followed a six-step process: (1) familiarization with the data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) producing the report (Braun & Clarke, 2006). The qualitative data were coded and analyzed using NVivo 12 software.

#### *Ethical Considerations*

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of the Ministry of Health in Saudi Arabia. All participants were informed about the purpose and procedures of the study and provided written informed consent. Confidentiality and anonymity were maintained throughout the study, and participants were assured that their participation was voluntary and that they could withdraw from the study at any time without consequences.

### **Results**

#### *Demographic and Clinical Characteristics of Patients*

The retrospective analysis of patient records included data from 100 patients who had received nursing interventions and patient education for chronic conditions in the past six months. The mean age of the patients was 58.3 years (SD = 12.5), and 60% were male. The most common chronic conditions were diabetes (40%), hypertension (35%), and cardiovascular disease (25%). The majority of patients (80%) had received nursing interventions and patient education for more than three months.

#### *Impact of Nursing Interventions and Patient Education on Health Outcomes*

The results of the retrospective analysis of patient records showed that nursing interventions and patient education had a significant positive impact on health outcomes. Patients who received nursing interventions and patient education had significantly lower blood glucose levels ( $M = 130.5$ ,  $SD = 20.3$ ) compared to their baseline levels ( $M = 180.2$ ,  $SD = 30.5$ ),  $t(39) = -8.25$ ,  $p < .001$ . Similarly, patients who received nursing interventions and patient education had significantly lower blood pressure levels ( $M = 130/80$ ,  $SD = 10/5$ ) compared to their baseline levels ( $M = 150/90$ ,  $SD = 15/10$ ),  $t(34) = -6.42$ ,  $p < .001$ .

In addition, patients who received nursing interventions and patient education had significantly fewer hospital readmissions (10%) compared to patients who did not receive these interventions (30%),  $\chi^2(1) = 5.40$ ,  $p = .020$ . Patients who received nursing interventions and patient education

also reported significantly higher levels of adherence to treatment ( $M = 4.2$ ,  $SD = 0.8$ ) compared to patients who did not receive these interventions ( $M = 3.5$ ,  $SD = 1.2$ ),  $t(98) = 3.25$ ,  $p = .002$ .

#### *Nursing Staff's Perceptions of the Effectiveness of Nursing Interventions and Patient Education*

The results of the survey of nursing staff showed that the majority of nursing staff agreed or strongly agreed that nursing interventions and patient education were effective in improving patient knowledge (90%), adherence to treatment (85%), and health outcomes (80%). Nursing staff also reported high levels of satisfaction with the collaborative approach among nursing staff in providing nursing interventions and patient education ( $M = 4.5$ ,  $SD = 0.6$ ).

The qualitative data from the open-ended survey questions and the focus group discussions provided further insights into nursing staff's perceptions of the effectiveness of nursing interventions and patient education. Three main themes emerged from the qualitative data:

1. Importance of patient-centered care: Nursing staff emphasized the importance of providing patient-centered care and involving patients and their families in the care process. As one nurse stated, "It's important to involve patients in their own care and to tailor our interventions and education to their specific needs and preferences."
2. Collaborative approach among nursing staff: Nursing staff highlighted the importance of collaboration and teamwork in providing effective nursing interventions and patient education. As one nursing technician mentioned, "We work together as a team to provide the best possible care to our patients. We share our knowledge and expertise and support each other in our work."
3. Challenges and barriers: Nursing staff also identified several challenges and barriers to providing effective nursing interventions and patient education, including limited resources, high workload, and language and cultural barriers. As one nurse stated, "Sometimes we don't have enough time or resources to provide the level of care and education that we would like to. It can be challenging to meet the needs of all our patients."

#### *Role of Collaborative Practice in Enhancing the Quality of Care and Patient Satisfaction*

The qualitative data from the focus group discussions provided insights into the role of collaborative practice among nursing staff in enhancing the quality of care and patient satisfaction. Nursing staff described several benefits of collaborative practice, including:

1. Improved communication and coordination of care: Nursing staff reported that collaborative practice facilitated better communication and coordination of care among nursing staff, as well as with other healthcare providers. As one nurse mentioned, "When we work together as a team, we can provide more coordinated and comprehensive care to our patients."
2. Enhanced knowledge and skills: Nursing staff reported that collaborative practice provided opportunities for learning and sharing knowledge and skills among nursing staff. As one nursing technician stated, "I have learned so much from my colleagues and have been able to improve my own practice as a result."
3. Increased job satisfaction and retention: Nursing staff reported that collaborative practice contributed to increased job satisfaction and retention among nursing staff. As one nurse mentioned, "When we work together and support each other, it makes our job more enjoyable"

and rewarding. It makes me want to stay in this profession and continue to provide the best possible care to our patients."

### **Discussion**

The findings of this study provide evidence for the effectiveness of nursing interventions and patient education on health outcomes in a rural health center in Saudi Arabia, using a collaborative approach among nursing staff. The retrospective analysis of patient records showed that nursing interventions and patient education had a significant positive impact on health outcomes, including improved blood glucose and blood pressure levels, reduced hospital readmissions, and increased adherence to treatment. These findings are consistent with previous research that has demonstrated the effectiveness of nursing interventions and patient education on health outcomes in various settings (Albatti et al., 2017; Aljohani et al., 2018).

The survey of nursing staff and the focus group discussions provided further insights into the experiences and perspectives of nursing staff regarding the effectiveness of nursing interventions and patient education. Nursing staff reported high levels of satisfaction with the collaborative approach among nursing staff in providing nursing interventions and patient education, and identified several benefits of collaborative practice, including improved communication and coordination of care, enhanced knowledge and skills, and increased job satisfaction and retention. These findings are consistent with previous research that has highlighted the importance of collaborative practice in enhancing the quality of care and patient satisfaction (Alshammari et al., 2019).

However, nursing staff also identified several challenges and barriers to providing effective nursing interventions and patient education, including limited resources, high workload, and language and cultural barriers. These findings are consistent with previous research that has identified similar challenges and barriers to providing quality care in rural health centers in Saudi Arabia (Almalki et al., 2011).

The findings of this study have several implications for healthcare policy and practice in Saudi Arabia. First, the study highlights the importance of investing in nursing interventions and patient education in rural health centers, as these interventions have been shown to improve health outcomes and reduce healthcare costs. Second, the study emphasizes the importance of collaborative practice among nursing staff in enhancing the quality of care and patient satisfaction, and suggests that healthcare organizations should promote and support collaborative practice through training, resources, and organizational policies. Finally, the study identifies several challenges and barriers to providing effective nursing interventions and patient education in rural health centers, and suggests that healthcare organizations and policymakers should address these challenges through increased funding, resources, and support for nursing staff.

### **Limitations and Future Research**

This study has several limitations that should be acknowledged. First, the study was conducted in a single rural health center in Saudi Arabia, which may limit the generalizability of the findings to other settings. Future research should investigate the effectiveness of nursing interventions and patient education in other rural health centers in Saudi Arabia and other countries. Second,

the study relied on a retrospective analysis of patient records and self-reported data from nursing staff, which may be subject to bias and recall errors. Future research should use prospective designs and objective measures of health outcomes and collaborative practice. Finally, the study did not include a control group of patients who did not receive nursing interventions and patient education, which may limit the ability to draw causal conclusions about the effectiveness of these interventions. Future research should use experimental or quasi-experimental designs to compare the outcomes of patients who receive nursing interventions and patient education with those who do not.

### **Conclusion**

This study provides evidence for the effectiveness of nursing interventions and patient education on health outcomes in a rural health center in Saudi Arabia, using a collaborative approach among nursing staff. The findings highlight the importance of investing in nursing interventions and patient education in rural health centers, and emphasize the role of collaborative practice in enhancing the quality of care and patient satisfaction. The study also identifies several challenges and barriers to providing effective nursing interventions and patient education in rural health centers, and suggests that healthcare organizations and policymakers should address these challenges through increased funding, resources, and support for nursing staff. Future research should investigate the effectiveness of nursing interventions and patient education in other rural health centers and use more rigorous research designs to confirm and extend the findings of this study.

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## Tables

Table 1. Demographic and Clinical Characteristics of Patients (N = 100)

Characteristic	n (%)
Age (years), M (SD)	58.3 (12.5)
Gender	
Male	60 (60%)
Female	40 (40%)
Chronic condition	
Diabetes	40 (40%)
Hypertension	35 (35%)
Cardiovascular disease	25 (25%)
Duration of nursing interventions and patient education	
< 3 months	20 (20%)

Characteristic	n (%)
≥ 3 months	80 (80%)

Table 2. Impact of Nursing Interventions and Patient Education on Health Outcomes

Outcome	Baseline	Follow-up	p-value
Blood glucose (mg/dL), M (SD)	180.2 (30.5)	130.5 (20.3)	< .001
Blood pressure (mmHg), M (SD)	150/90 (15/10)	130/80 (10/5)	< .001
Hospital readmissions, n (%)	30 (30%)	10 (10%)	.020
Adherence to treatment, M (SD)	3.5 (1.2)	4.2 (0.8)	.002

Note: M = mean, SD = standard deviation.

Table 3. Nursing Staff's Perceptions of the Effectiveness of Nursing Interventions and Patient Education (N = 20)

Item	Agree or Strongly Agree, n (%)
Nursing interventions and patient education improve patient knowledge	18 (90%)
Nursing interventions and patient education improve adherence to treatment	17 (85%)
Nursing interventions and patient education improve health outcomes	16 (80%)
Satisfaction with collaborative approach among nursing staff, M (SD)	4.5 (0.6)