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Original article

Nurses' readiness to prescribe under supervision in Saudi Arabia: A cross-sectional study

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ABSTRACT

Aim: To explore nurses' readiness to prescribe medications under supervision and identify associations between prescribing practices under supervision and demographic characteristics in Saudi Arabia.
Design: A cross-sectional study.
Methods: Using convenience sampling, this study used a 32-item survey to collect data on nurses prescribing medications under supervision between December 2022 and March 2023.
Results: A total of 379 nurses were recruited from different regions in Saudi Arabia. Approximately 7% (n = 30) of the participants were prescribing medications independently, and 70% (n = 267) expressed their likelihood of becoming prescribers. The highest motivating factors to become prescribers were improvement of patient care (52.2%) and contribution to the multidisciplinary team (52.0%). Most participants (60%–81%) agreed that prescribing medications under supervision would improve potential outcomes at the system, nurse, and patient levels. Availability of appropriate mentors or supervisors (72.9%) was the highest rated facilitating factor, followed by support of nursing colleagues (72%). Based on demographic characteristics, findings revealed significant differences in the: a) likelihood and motivators of becoming prescribers; b) required minimum qualification, years of experience, and continuing professional education hours to become prescribers; and c) type of organizations delivering educational programs for nurse prescribing.
Conclusion: Majority of nurses in Saudi Arabia favored becoming prescribers, and motivating factors were mostly relevant to optimizing patient care outcomes. Having the proper supervision was rated as the most facilitating factor for nurse prescribing. Nurses' views on potential outcomes, facilitating factors, and possible motivators varied based on nurses' demographical characteristics.
Implications for the professional and/or patient care: Nurses favored prescribing under supervision to improve patient care outcomes, which is an opportunity to expand the benefits of health services, including easy access to healthcare.

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Impact: Results revealed that nurses support the implementation of prescribing practice under supervision. Thus, the findings may inform practice change in Saudi Arabia to allow prescribing under supervision, which was perceived to have a positive impact on patient care outcomes.
Reporting Method: This study adhered to STROBE guidelines.
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1. Introduction

The ability to prescribe medications has long been limited to the medical profession. However, owing to the shortage of providers, limited access to healthcare, increase in chronic health conditions, increased interprofessional teamwork, and advancement in nursing higher education, an increasing number of countries have enacted reforms to widen access to medications, which grants nurses prescribing capacity (Gielen et al., 2014; Maier, 2019; Weeks et al., 2013). Countries that do not predominately have authorized independent nurse prescribers, such as advanced practice nurses, allowed registered nurses (RNs) to prescribe some medications under supervision after the completion of adequate prescribing qualification and training (Bartosiewicz and Różański, 2019; Brimblecombe and Dobel-Ober, 2022; Fox et al., 2022; Lennon and Fallon, 2018; Maier, 2019; Romero-Collado et al., 2017).

Allowing nurses to prescribe under supervision contributes to optimal patient outcomes. For instance, prescribing under supervision has positive effects on controlling HbA1c levels in patients with type 2 diabetes (Azami et al., 2018), and is comparable to the level of HbA1C managed by physicians (Wang et al., 2019), allowing patients with respiratory disorders to manage their conditions better, which reduces hospital readmissions and length of stay (Carey et al., 2014) and enhances adherence to treatment regimens through medication concordance for patients with mental disorders (Ross, 2015). Additionally, nurses with prescribing capacity attain levels of patient satisfaction comparable to those attained by other providers (Courtenay et al., 2011; Lennon and Fallon, 2018; Tinelli et al., 2015; Weiss et al., 2015). Furthermore, allowing nurses to prescribe under supervision contributed positively on the nursing profession by promoting autonomy, professional identity, and job satisfaction (Fox et al., 2022; McBrien, 2015; Romero-Collado et al., 2014).

Similar to other countries, several challenges exist in accessing healthcare in Saudi Arabia, including a shortage of physicians. According to Alluhidan et al. (2020), the number of physicians employed in Saudi Arabia is lower than that in the Economic Co-operation and Development countries. For example, the number of practicing primary care physicians in Saudi Arabia was 2.88 per 10,000 people in 2019, compared to 8.81 in the United States, 12.2 in Canada, and 6.74 in the United Kingdom (Almotairy et al., 2022). Thus, it is necessary to increase the number of providers who have additional privileges, such as prescribing medications, to increase access to health services and meet disparate healthcare needs. Nurses with adequate academic and clinical training can contribute to closing the gap in healthcare access and optimizing patient outcomes (Almotairy et al., 2022; Hibbert et al., 2017). To the best of our knowledge, no previous study evaluated the current state of nurse prescribing patterns in Saudi Arabia nor what nurses know about prescribing practices under supervision. Therefore, this study aimed to explore nurses' readiness to prescribe under supervision in Saudi Arabia.

2. The study

2.1. Aims

The present study aimed to explore nurses' readiness to prescribe medications under supervision. Furthermore, it aimed to identify the association between prescribing under supervision and demographic characteristics.

3. Methods

3.1. Design

The present study used a descriptive cross-sectional design and convenience sampling approach. This study adhered to the Strengthening the Reporting of Observational studies in Epidemiology (STROBE) guidelines.

3.2. Settings and participants

The study recruited individuals who were registered and classified by the Saudi Commission for Health Specialties (SCFHS) as nurse technicians, nurse specialist, senior nurse specialist, and nurse consultant. Furthermore, the study recruited registered nurses from across all healthcare and non-healthcare settings, such as academic settings. Nurses were excluded from the study if they did not have active registration by SCFHS or lack the ability to read and understand English language.

3.3. Measures

A survey developed by Fox et al. (2022) was used to assess nurses' readiness to prescribe medications under supervision. The survey was modified by the investigators to suit the Saudi healthcare context. The original survey consisted of three main sections, with a total of 32 items. The first section evaluated nurses' views on the potential outcomes of prescribing under supervision (11 items) and factors that facilitate the implementation of prescribing under supervision (12 items) on a five-point Likert scale of agreement (0 = *strongly disagree* to 4 = *strongly agree*).

The second section explored nurses' beliefs regarding the eligibility to prescribe medications, including educational requirements. The likelihood of participants prescribing medications upon completion of the required education was evaluated using a single-item question on a five-point Likert scale of likelihood (1 = *extremely unlikely* to 5 = *extremely likely*). Key motivations for becoming a prescriber were assessed using a single-item question on a five-point Likert scale (1 = *highest motivation* to 5 = *lowest motivation*). A single-item question (total of eight items) was used to assess the following aspects: the unlikelihood of becoming a prescriber, the minimum amount of clinical experience nurses should have prior to becoming a prescriber, formats of the prescribing program, types of institutions that should offer the prescribing program, awarding of degree upon completion of the

prescribing educational program, renewal requirements for maintaining prescribing privilege, factors that support the decision to undertake the prescribing course, and eligibility for additional benefits upon completion of the prescribing program. The third section consisted of demographic items that measured the SCFHS classification, age, gender, years of experience as a nurse and in the current context of practice, location and setting of current practice, types of population mostly dealt with, type of nursing role (e.g., clinical, administration, academic, research), country where the first nursing qualification was completed, highest nursing qualification, and whether participants were currently prescribing any type of medications. The original survey had no reported reliability measures. Therefore, no reliability analysis was conducted in this study.

3.4. Data collection

Data were collected between December 2022 and March 2023. The General Directorate of Nursing affairs at the Saudi Ministry of Health received an email from the principal investigator that requested distributing the study invitation. The study invitation contained information about the study purpose, informed consent, and a link to an anonymous online questionnaire. The General Directorate of Nursing affairs at the Saudi Ministry of Health distributed the study invitation through email to nurse regional directors in all 13 Saudi regions through the internal email system of the Ministry of Health. The nurse regional directors were directed to email the study invitation to nurses across all healthcare settings within their region. To reach eligible nurses working for non-Ministry of Health, private sectors, and academic settings, the principal investigator contacted the Saudi Nurses Association (SNA) and requested distributing the study invitation to nurses who were SNA members. The General Directorate of Nursing affairs at the Saudi Ministry of Health and SNA sent a reminder two weeks following the initial communication with the nurse regional directors.

Nurses who were interested to participate in the study clicked on the link attached to the study invitation, provided informed consent, and completed the questionnaire. No identifiable information was collected from the study participants. Completed questionnaires were kept in a secure, password-protected drive at the principal investigator's office.

3.5. Ethical consideration

Ethical approval for this study was obtained from the concerned institutional review board (blinded for peer review).

3.6. Data analysis

Descriptive statistics were used to report the frequencies and percentages of categorical demographic and survey items. Range, mean, and standard deviation (SD) were used for continuous demographic characteristics and survey items. The chi-square test was used to evaluate group differences between the questionnaire items. Furthermore, the chi-square test was used to evaluate group differences between the questionnaire items and demographic characteristics. The frequency of items that had five-point Likert scale of likelihood were reduced to three-point Likert scale to overcome violations to chi-square assumptions that occurred during initial analysis. Statistical significance was defined as a two-sided p-value of less than 0.05. All analyses were performed using SPSS v29.0 (IBM Corp., Armonk, NY, USA).

4. Results

4.1. Demographic characteristics

The present study included 379 participants; most were female (76.8%; n = 291), whereas 23.2% (n = 88) were male. The mean age was 35.77 (SD ± 7.32). Additionally, the average number of years of experience as an RN and in the current context of practice were 11.41 (SD ± 7.03) and 7.23 years (SD ± 5.94), respectively. Out of the 379 participants, most participants worked for the Ministry of Health (78.4%, n = 297), 54% (n = 206) of the participants had a Bachelor's degree in nursing, 26% (n = 100) were classified by the SCFHS as nurse technicians, 56% (n = 212) were classified as nurse specialists, and 17% (n = 63) were classified as senior nurse specialists. While 7.3% (n = 30) of the study sample could prescribe medicines independently, 73% (n = 300) could not. Almost half of the participants (51%, n = 193) obtained their first nursing qualification in Saudi Arabia. Approximately 70% (n = 267) expressed their likelihood to become prescribers if they were to complete the required training in medication prescribing. Out of the 322 participants who responded to the key motivator items, the most rated key motivators to become prescribers were improvement of patient care (52.2%, n = 298) and contribution to the multidisciplinary team (52.0%, n = 197). Out of the 345 participants who responded to the bed capacity item, nearly 51% (n = 193) of the participants worked in healthcare facilities with a bed capacity of less than 200 (Table 1).

4.2. Outcomes of the implementation of nurse prescribing under supervision

Participants elicited high levels of agreement (strongly agree and agree) that implementing nurse prescribing under supervision would improve the use of nurse knowledge, skills, and capacity (81.1%, n = 307), patient education regarding medicine (76.3%, n = 289), access to nurse-led models of care (76%, n = 288), capacity of the healthcare system owing to a more flexible workforce (71.8%, n = 272), patient healthcare experience (70.7%, n = 268), retention of clinicians within the nursing profession (70.1%, n = 266), healthcare delivery (63%, n = 239), and access to prescription medicines (59.9%, n = 227). Furthermore, participants indicated high levels of agreement (strongly agree and agree) that allowing nurses to prescribe under supervision would reduce safety risks to patients (64.4%, n = 244), costs to the healthcare system (64.1%, n = 243), and patients' healthcare costs (62.3%, n = 236). Statistically significant differences were observed between the distribution of responses to all outcomes of the implementation of nurse prescribing under supervision (p <.001) (Table 2).

4.3. Factors that facilitate the implementation of nurse prescribing under supervision

Participants showed high levels of agreement (strongly agree and agree) with factors that may affect the implementation of nurse prescribing under supervision. These factors were the availability of appropriate mentors or supervisors to facilitate roles, skills, and knowledge development (72.9%, n = 276), acknowledgement of the impact on workload of nurses (72.5%, n = 275), support from nursing colleagues (72%, n = 273), supportive legislation, regulation, and relevant health policy (71.3%, n = 270), support from medical colleagues (70.4%, n = 267), support from pharmacy colleagues (69.9%, n = 265), models of nursing care that optimize the use of nurse prescribing (69.9%, n = 265), organizational commitment (68.6%, n = 260), remuneration to

Table 1
Frequency and percentage of demographic characteristics in the study group (n = 379).

	N	%
Age		
Mean ± SD	35.77 ± 7.32	
Range	23–59	
Missing	0 (0%)	
Gender		
Female	291	76.8%
Male	88	23.2%
Missing	32	0 (0%)
Highest degree of education		
Associate diploma degree	56	14.8%
Bachelor's degree	206	54.4%
Post-bachelor's certificate or diploma	14	3.7%
Master's degree	73	19.3%
Doctorate degree	30	7.9%
Missing	0	0%
SCFHS Classification		
Nurse Technician	100	26.4%
Nurse Specialist	212	55.9%
Nurse Senior Specialist	63	16.6%
Nurse Consultant	4	1.1%
Missing	0	0%
Number of years of experience as registered nurse		
Mean ± SD	11.41 ± 7.03	
Range	1–35	
Missing	0 (0%)	
Number of years of experience in the current context of practice		
Mean ± SD	7.23 ± 5.94	
Range	0–35	
Missing	0 (0%)	
Country of first qualification/degree		
Saudi Arabia	193	50.9%
Other	184	48.5%
Missing	2	0.5%
Type of work institution		
Governmental – MOH	297	78.4%
Governmental - Other health institutions	36	9.5%
Private Health Institution	12	3.2%
Academic (university, college, or faculty)	34	9.0%
Missing	0	0%
Bed capacity		
< 200 beds	193	50.9%
200–399 beds	89	23.5%
≥ 400 beds	63	16.6%
Missing	34	9.0%
Prescribing practices in Saudi Arabia		
Prescribing independently	30	7.3%
Initiate/adjust/cease medicine	49	11.9%
Not prescribing medicine	300	73%
Missing	0	0%
Likelihood to become a prescriber after completing required education		
Likely	267	70.4%
Neither likely nor unlikely	55	14.5%
Unlikely	57	15.0%
Missing	0	0%
Key motivator for becoming a prescriber: Improved care for patients		
High motivator	198	52.2%
Neutral	71	18.7%
Low motivator	53	14.0%
Missing	57	15.0%
Key motivator for becoming a prescriber: Improved job satisfaction		
High motivator	186	49.1%
Neutral	72	19.0%
Low motivator	64	16.9%
Missing	57	15.0%
Key motivator for becoming a prescriber: Increased remuneration/income		
High motivator	177	46.7%
Neutral	85	22.4%
Low motivator	60	15.8%
Missing	57	15.0%
Key motivator for becoming a prescriber: Improved professional reputation		
High motivator	186	49.0%
Neutral	77	20.3%
Low motivator	59	15.6%
Missing	57	15.0%
Key motivator for becoming a prescriber: Contribution to the multidisciplinary team		
High motivator	197	52.0%
Neutral	69	18.2%
Low motivator	56	14.8%
Missing	57	15.0%

Note. MOH: Ministry of Health.

acknowledge prescribing practice (66.5%, n = 252), unrestricted prescribing – which is prescribing by a healthcare provider without any limitations or restrictions – based on a clear scope of practice (61.2%, n = 232), health services receiving reimbursement for nurse prescribing activities (58.9%, n = 223), and acceptance of nurse prescribing by patients or clients (58.5%, n = 222). Statistically significant differences were observed between the distribution of responses to the factors affecting the implementation of nurse prescribing (p <.001) (Table 2). "Unrestricted prescription" typically refers to a type of medication that can be prescribed.

4.4. Differences in perceptions of nurse prescribing based on demographic characteristics

The bivariate analyses showed statistically significant differences in the participants' likelihood of wanting to become a prescriber based on gender (X^2 = 18.38, Cramer's V = 0.220, p <.001), country of first nursing qualification (X^2 = 19.21, Cramer's V = 0.226, p <.001), and level of education (X^2 = 12.20, Cramer's V = 0.127, p =.016) (Table 3). The ratings of key motivations for becoming a prescriber were significantly different for several perceived motivators (Table 4). The motivation rate for improved care for patients was statistically different based on SCFHS classification (X^2 = 21.70, Cramer's V = 0.184, p =.017), country of first nursing qualification (X^2 = 16.47, Cramer's V = 0.227, p =.006), and level of education (X^2 = 41.32, Cramer's V = 0.253, p <.001). The motivation rate for improved job satisfaction was significantly different based on the SCFHS classification (X^2 = 18.54, Cramer's V = 0.170, p =.018) and country of first nursing qualification (X^2 = 14.37, Cramer's V = 0.212, p =.006). Moreover, statistically significant differences were observed in the motivation rate for: i) increased remuneration based on gender (X^2 = 10.01, Cramer's V = 0.176, p =.040); ii) improved professional reputation based on SCFHS classification (X^2 = 27.81, Cramer's V = 0.208, p =.002), level of education (X^2 = 32.88, Cramer's V = 0.226, p <.001), and type of work institution (X^2 = 25.12, Cramer's V = 0.161, p =.048); and iii) contribution to the multidisciplinary team based on SCFHS classification (X^2 = 22.47, Cramer's V = 0.187, p =.004).

Additionally, statistically significant differences were observed in participants' perception of the minimum amount of clinical experience an RN should have prior to commencing a prescribing course based on the country of first nursing qualification (X^2 = 18.10, Cramer's V = 0.219, p <.001) and type of work institution (X^2 = 29.36, Cramer's V = 0.161, p =.003) (Table 5). Furthermore, statistically significant differences were observed in the participants' perceptions of the organizations that should develop and deliver educational programs for nurse prescribing based on the SCFHS classification (X^2 = 27.76, Cramer's V = 0.191, p =.002), country of first nursing qualification (X^2 = 17.47, Cramer's V = 0.215, p =.004), level of education (X^2 = 56.93, Cramer's V = 0.274, p <.001), and type of work institution (X^2 = 50.12, Cramer's V = 0.210, p <.001) (Table 6). Statistically significant differences were also observed in participants' perception of the

Table 2
Items and nurses' views on potential outcomes and factors that facilitate the implementation of nurse prescribing under supervision in the study group (n = 379).

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Chi-Square	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%	X^2	*P*-Value
Potential outcomes												
Improve healthcare delivery	120	31.7	119	31.4	68	17.9	42	11.1	30	7.9	93.94	<0.001***
Increase access to nurse-led models of care	108	28.5	180	47.5	57	15	27	7.1	7	1.8	255.45	<0.001***
Improve patient healthcare experience	107	28.2	161	42.5	71	18.7	31	8.2	9	2.4	194.26	<0.001***
Improve patient access to prescription medicines	83	21.9	144	38	88	23.2	45	11.9	19	5	119.09	<0.001***
Improve patient education regarding medicines	123	32.5	166	43.8	62	16.4	19	5	9	2.4	240.67	<0.001***
Reduce patients' healthcare costs	98	25.9	138	36.4	82	21.6	54	14.2	7	1.8	126.77	<0.001***
Reduce safety risks for patients	102	26.9	142	37.5	72	19	48	12.7	15	4	126.03	<0.001***
Improve use of nurse knowledge, skills, and capability	148	39.1	159	42	51	13.5	15	4	6	1.6	281.25	<0.001***
Improve retention of clinicians within the nursing profession	101	26.6	165	43.5	84	22.2	23	6.1	6	1.6	215.29	<0.001***
Reduce costs to the healthcare system	92	24.3	151	39.8	82	21.6	43	11.3	11	2.9	148.16	<0.001***
Improve the capacity of the healthcare system due to a more flexible workforce.	103	27.2	169	44.6	68	17.9	32	8.4	7	1.8	212.91	<0.001***
Factors that facilitate the implementation												
Organizational commitment for implementation	108	28.5	152	40.1	81	21.4	27	7.1	11	2.9	177.45	<0.001***
Health services receive reimbursement for nurse prescribing activities	76	20.1	147	38.8	109	28.8	35	9.2	12	3.2	157.08	<0.001***
Support from nursing colleagues	102	26.9	171	45.1	69	18.2	25	6.6	12	3.2	216.98	<0.001***
Support from medical colleagues	107	28.2	160	42.2	77	20.3	23	6.1	12	3.2	196.87	<0.001***
Support from pharmacy colleagues	101	26.6	164	43.3	72	19	29	7.7	13	3.4	192.12	<0.001***
Availability of appropriate mentors or supervisors to facilitate roles, skills, and knowledge development	117	30.9	159	42	68	17.9	26	6.9	9	2.4	206.11	<0.001***
Acknowledgement of the impact on workload of nurses	113	29.8	162	42.7	71	18.7	27	7.1	6	1.6	212.28	<0.001***
Remuneration or compensation to acknowledge prescribing practice	89	23.5	163	43	85	22.4	33	8.7	9	2.4	186.77	<0.001***
Supportive legislation, regulation, and relevant health policy	109	28.8	161	42.5	76	20.1	23	6.1	10	2.6	204.21	<0.001***
Models of nursing care that optimize use of nurse prescribing	100	26.4	165	43.5	76	20.1	29	7.7	9	2.4	200.46	<0.001***
Unrestricted prescribing based on a clear scope of practice	88	23.2	144	38	90	23.7	46	12.1	11	2.9	133.10	<0.001***
Acceptance of nurse prescribing by patients or clients	82	21.6	140	36.9	92	24.3	48	12.7	17	4.5	114.15	<0.001***

Table 3
Nurses' views on becoming prescribers (N = 379).

If RNs were able to complete education to prescribe medicines, how likely are you to want to become a prescriber?		Extremely/ Somewhat Unlikely		Neither likely nor unlikely		Extremely/ Somewhat Likely		Chi-Square		
		N	%	*N*	%	*N*	%	Cramer's V	X^2	*P*-Value
Gender	Male	6	6.8	4	4.5	78	88.6	0.220	18.38	<0.001***
	Female	51	17.5	51	17.5	189	64.9			
SCFHS classification	Nurse Technician	21	21	17	17	62	62	0.098	7.33	0.120
	Nurse Specialist	30	14.2	31	14.6	151	71.2			
	Nurse Senior Specialist or Consultant	6	9	7	10.4	54	80.6			
Country of education	Saudi	16	8.3	22	11.4	155	80.3	0.226	19.21	<0.001***
	Others	41	22.3	31	16.8	112	60.9			
Level of education	Diploma	8	14.3	5	8.9	43	76.8	0.127	12.20	0.016*
	Bachelor's	40	19.4	35	17	131	63.6			
	Master's or post-graduate certificate or Doctoral degree	9	7.7	15	12.8	93	79.5			
Type of institution	Governmental - MOH	50	16.8	46	15.5	201	67.7	0.105	8.33	0.215
	Governmental - non-MOH	2	5.6	4	11.1	30	83.3			
	Private sectors	3	25	1	8.3	8	66.7			
	Academic (university, college, or faculty)	2	5.9	4	11.8	28	82.4			
Bed capacity	< 200 beds	35	18.1	29	15	129	66.8	0.060	2.45	0.653
	200–399 beds	13	14.6	14	15.7	62	69.7			
	≥ 400 beds	7	11.1	8	12.7	48	76.2			

Note. MOH: Ministry of Health.

required level of qualification for nurse prescribing based on gender (X^2 = 15.28, Cramer's V = 0.201, p =.002), SCFHS classification (X^2 = 26.09, Cramer's V = 0.186, p <.001), country of first nursing qualification (X^2 = 20.62, Cramer's V = 0.234, p <.001), level of education (X^2 = 33.98, Cramer's V = 0.212, p <.001), and type of work institution (X^2 = 19.92, Cramer's V = 0.132, p =.018) (Table 7).

Table 4
Nurses' views on motivators for becoming prescribers (N = 379).

Improved care for patients		**Key motivation for becoming a prescriber**										**Chi-Square**		
		1 Highest motivation		**2**		**3**		**4**		**5 Lowest motivation**				
		N	**%**	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**	**Cramer's V**	**X^2**	***P*-Value**
Gender	Male	6	7.3	8	9.8	14	17.1	13	15.9	40	48.8	0.120	4.62	0.464
	Female	17	7.1	22	9.2	57	23.8	40	16.7	104	43.3			
SCFHS Classification	Nurse Technician	8	10.1	8	10.1	19	24.1	21	26.6	23	29.1	0.184	21.70	0.017*
	Nurse Specialist	8	4.4	15	8.2	44	24.2	26	14.3	88	48.4			
	Nurse Senior Specialist or Consultant	7	11.5	7	11.5	8	13.1	6	9.8	33	54.1			
Country of education	Saudi	14	7.9	14	7.9	26	14.7	36	20.3	86	48.6	0.227	16.47	0.006**
	Others	9	6.3	15	10.5	45	31.5	17	11.9	57	39.9			
Level of education	Diploma	5	10.4	3	6.3	11	22.9	16	33.3	13	27.1	0.253	41.32	<0.001***
	Bachelor's	6	3.6	12	7.2	50	30.1	26	15.7	72	43.4			
	Master's or post-graduate certificate or Doctoral	12	11.1	15	13.9	10	9.3	11	10.2	59	54.6			
Type of institution	Governmental - MOH	16	6.5	24	9.7	56	22.7	43	17.4	107	43.3	0.133	17.06	0.315
	Governmental - non-MOH	3	8.8	2	5.9	9	26.5	5	14.7	15	44.1			
	Private sectors	0	0	0	0	5	55.6	0	0	4	44.4			
	Academic (university, college, or faculty)	4	12.5	4	12.5	1	3.1	5	15.6	18	56.3			
Bed capacity	< 200 beds	8	5.1	17	10.8	37	23.4	28	17.7	67	42.4	0.100	5.80	0.832
	200–399 beds	5	6.6	7	9.2	19	25	12	15.8	33	43.4			
	≥ 400 beds	6	10.7	2	3.6	14	15	8	14.3	26	46.4			
Improved job satisfaction														
Gender	Male	9	11	10	12.2	12	14.6	9	11	42	51.2	0.136	5.95	0.203
	Female	17	7.1	28	11.7	60	25	35	14.6	100	41.7			
SCFHS Classification	Nurse Technician	10	12.7	12	15.2	23	29.1	11	13.9	23	29.1	0.170	18.54	0.018*
	Nurse Specialist	8	4.4	22	12.1	39	21.4	27	14.8	86	47.3			
	Nurse Senior Specialist or Consultant	8	13.1	4	6.6	10	16.4	6	9.8	33	54.1			
Country of education	Saudi	17	9.6	16	9	31	17.5	21	11.9	92	52	0.212	14.37	0.006**
	Others	8	5.6	21	14.7	41	28.7	23	16.1	50	35			
Level of education	Diploma	6	12.5	5	10.4	12	25	9	18.8	16	33.3	0.153	15	0.059
	Bachelor	9	5.4	21	12.7	46	27.7	22	13.3	13	12			
	Master or post-graduate certificate or Doctoral	11	10.2	12	11.1	14	13	13	12	58	53.7			
Type of institution	Governmental - MOH	19	7.7	33	13.4	55	22.3	38	15.4	102	41.3	0.119	12.78	0.315
	Governmental - non-MOH	4	11.8	3	8.8	8	23.5	4	11.8	15	44.1			
	Private sectors	0	0	0	0	4	44.4	1	11.1	4	44.4			
	Academic (university, college, or faculty)	3	9.4	2	6.3	5	15.6	1	3.1	21	65.6			
Bed capacity	< 200 beds	14	8.9	20	12.7	37	23.4	25	15.8	62	39.2	0.085	4.17	0.841
	200–399 beds	3	3.9	9	11.8	18	23.7	9	11.8	37	48.7			
	≥ 400 beds	6	10.7	7	12.5	12	21.4	9	16.1	22	39.3			
Increased remuneration														
Gender	Male	10	12.2	11	13.4	14	17.1	8	9.8	39	47.6	0.176	10.01	0.040*
	Female	18	7.5	21	8.8	71	29.6	40	16.7	90	37.5			
SCFHS Classification	Nurse Technician	9	11.4	11	13.9	28	35.4	6	7.6	25	31.6	0.164	17.27	0.072
	Nurse Specialist	11	6	16	8.8	48	26.4	29	15.9	78	42.9			
	Nurse Senior Specialist or Consultant	8	13.1	5	8.2	9	14.8	13	21.3	26	42.6			
Country of education	Saudi	15	8.5	19	10.7	37	20.9	30	16.9	76	42.9	0.149	7.12	0.130
	Others	13	9.1	12	8.4	48	33.6	18	12.6	52	36.4			
Level of education	Diploma	5	10.4	6	12.5	14	29.2	6	12.5	17	35.4	0.117	8.87	0.353
	Bachelor's	11	6.6	15	9	52	31.3	22	13.3	66	39.8			
	Master's or post-graduate certificate or Doctoral	12	11.1	11	10.2	19	17.6	20	18.5	46	42.6			
Type of institution	Governmental - MOH	23	9.3	24	9.7	65	26.3	41	16.6	94	38.1	0.129	16.09	0.187
	Governmental - non-MOH	2	5.9	6	17.6	8	23.5	4	11.8	14	41.2			
	Private sectors	0	0	0	0	6	66.7	0	0	3	33.3			

(*continued on next page*)

Table 4 (*continued*)

Improved care for patients		Key motivation for becoming a prescriber										Chi-Square		
		1 Highest motivation		2		3		4		5 Lowest motivation				
		N	%	*N*	%	*N*	%	*N*	%	*N*	%	Cramer's V	X^2	*P*-Value
	Academic (university, college, or faculty)	3	9.4	2	6.3	6	18.8	3	9.4	18	56.3			
Bed capacity	< 200 beds	11	7	16	10.1	47	29.7	23	14.6	61	38.6	0.150	13.04	0.111
	200–399 beds	3	3.9	8	10.5	21	27.6	12	15.8	32	42.1			
	≥ 400 beds	11	19.6	6	10.7	11	19.6	10	17.9	18	32.1			
Improved professional reputation														
Gender	Male	12	14.6	7	8.5	15	18.3	9	11	38	46.3	0.185	11.01	0.051
	Female	14	5.8	26	10.8	62	25.8	33	13.8	105	43.8			
SCFHS Classification	Nurse Technician	6	7.6	11	13.9	25	31.6	13	16.5	24	39.4	0.208	27.81	0.002**
	Nurse Specialist	8	4.4	19	10.4	44	24.2	20	11	90	49.5			
	Nurse Senior Specialist or Consultant	12	19.7	3	4.9	8	13.1	9	14.8	29	47.5			
Country of education	Saudi	19	10.7	12	6.8	38	21.5	24	13.6	83	46.9	0.176	9.97	0.076
	Others	7	4.9	20	14	39	27.3	18	12.6	59	41.3			
Level of education	Diploma	5	10.4	2	4.2	16	33.3	10	20.8	15	31.3	0.226	32.88	<0.001***
	Bachelor's	5	3	22	13.3	48	28.9	18	10.8	73	44			
	Master's or post-graduate certificate or Doctoral	16	14.8	9	8.3	13	12	14	13	55	50.9			
Type of institution	Governmental - MOH	14	5.7	29	11.7	60	24.3	37	15	106	42.9	0.161	25.12	0.048*
	Governmental - non-MOH	5	14.7	2	5.9	10	29.4	3	8.8	14	41.2			
	Private sectors	0	0	1	11.1	4	44.4	0	0	4	44.4			
	Academic (university, college, or faculty)	7	21.9	1	3.1	3	9.4	2	6.3	19	59.4			
Bed capacity	< 200 beds	7	4.4	21	13.3	42	26.6	21	13.3	66	41.8	0.160	14.77	0.141
	200–399 beds	3	3.9	8	10.5	20	26.3	9	11.8	36	47.4			
	≥ 400 beds	9	16.1	3	5.4	12	21.4	10	17.9	22	39.3			
Contribution to the multi-disciplinary team														
Gender	Male	8	9.8	8	9.8	13	15.9	15	18.3	38	46.3	0.086	2.38	0.667
	Female	17	7.1	23	9.6	56	23.3	41	17.1	103	42.9			
SCFHS Classification	Nurse Technician	7	8.9	12	15.2	22	27.8	12	15.2	26	32.9	0.187	22.47	0.004**
	Nurse Specialist	8	4.4	15	8.2	42	23.1	31	17	86	47.3			
	Nurse Senior Specialist or Consultant	10	16.4	4	6.6	5	8.2	13	21.3	29	47.5			
Country of education	Saudi	14	7.9	15	8.5	31	17.5	34	19.2	83	46.9	0.123	4.82	0.306
	Others	10	7	15	10.5	38	26.6	22	15.4	58	40.6			
Level of education	Diploma	4	8.3	7	14.6	10	20.8	8	16.7	19	39.6	0.143	13.12	0.108
	Bachelor's	9	5.4	14	8.4	46	27.7	26	15.7	71	42.8			
	Master's or post-graduate certificate or Doctoral	12	11.1	10	9.3	13	12	22	20.4	51	47.2			
Type of institution	Governmental - MOH	17	6.9	26	10.5	54	21.9	41	16.6	109	44.1	0.125	15.21	0.230
	Governmental - non-MOH	4	11.8	1	2.9	9	26.5	9	26.5	11	32.4			
	Private sectors	0	0	0	0	4	44.4	1	11.1	4	44.4			
	Academic (university, college, or faculty)	4	12.5	4	12.5	2	6.3	5	15.6	17	53.1			
Bed capacity	< 200 beds	6	3.8	18	11.4	36	22.8	31	19.6	67	42.4	0.142	11.67	0.167
	200–399 beds	6	7.9	7	7.9	19	25	11	14.5	34	44.7			
	≥ 400 beds	9	16.1	3	5.4	12	21.4	9	16.1	23	41.1			

Note. MOH: Ministry of Health.

Table 5
Nurses' views on the minimum number of years required to become a prescriber (*N* = 379).

		Minimum amount of clinical experience a RN should have prior to commencing a prescribing course?										Chi-Square		
		< 1-year full time equivalent		1–2 year full time equivalent		2–5 year full time equivalent		5–10 year full time equivalent		≥ 10 year full time equivalent				
		N	%	*N*	%	*N*	%	*N*	%	*N*	%	Cramer's V	X^2	*P*-Value
Gender	Male	10	11.4	18	20.5	30	34.1	21	23.9	9	10.2	0.143	7.76	0.101
	Female	22	7.6	66	22.7	70	24.1	74	25.4	59	20.3			
SCFHS Classification	Nurse Technician	9	9	18	18	26	26	25	25	22	22	0.112	9.56	0.297
	Nurse Specialist	17	8	55	25.9	50	23.6	51	24.1	39	18.4			
	Nurse Senior Specialist or Consultant	6	9	11	16.4	24	35.8	19	28.4	7	10.4			
Country of education	Saudi	19	9.8	47	24.4	60	31.1	47	24.4	20	10.4	0.219	18.10	0.001**
	Others	13	7.1	37	20.1	39	21.2	47	25.5	48	26.1			
Level of education	Diploma	7	12.5	10	17.9	13	23.2	12	21.4	14	25	0.126	12.12	0.146
	Bachelor's	16	7.8	48	23.3	50	24.3	49	23.8	43	20.9			
	Master's or post-graduate certificate or Doctoral	9	7.7	26	22.2	37	31.6	34	29.1	11	9.4			
Type of institution	Governmental - MOH	27	9.1	65	21.9	72	24.2	74	24.9	59	19.9	0.161	29.36	0.003**
	Governmental - non-MOH	4	11.1	9	25	9	25	12	33.3	2	5.6			
	Private sectors	1	8.3	1	8.3	2	16.7	2	16.7	6	50			
	Academic (university, college, or faculty)	0	0	9	26.5	17	50	7	20.6	1	2.9			
Bed capacity	< 200 beds	23	11.9	37	19.2	45	23.3	51	26.4	37	19.2	0.113	8.85	0.355
	200–399 beds	3	3.4	26	29.2	21	23.6	23	25.8	16	18			
	≥ 400 beds	6	9.5	12	19	17	27	14	22.2	14	22.2			

Note. MOH: Ministry of Health.

When asked if nurse prescribers should be required to undertake an additional 10 h of continuing professional development per year to meet registration requirements as prescribers, statistically significant differences were observed based on the country of first nursing qualification (X^2 = 6.87, Cramer's V = 0.135, p =.032) and level of education (X^2 = 14.52, Cramer's V = 0.138, p =.006) (Table 8). Moreover, statistically significant differences were observed in the participants' perceptions of the eligibility of nurses who completed an accredited nurse prescribing program for qualification allowance based on gender (X^2 = 9.48, Cramer's V = 0.158, p =.024) and level of education (X^2 = 17.05, Cramer's V = 0.150, p =.009) (Table 8). As shown in Supplemental Table 1, statistically significant differences were observed in eight outcomes of implementing nurse prescribing based on gender, six outcomes based on SCFHS classification, ten outcomes based on the country of first nursing qualification, nine outcomes based on the highest level of education, two outcomes based on the type of work institution, and one outcome based on bed capacity. In addition, statistically significant differences were observed in nine factors affecting nurse prescribing based on gender, seven factors based on the SCFHS classification, all 12 factors based on the country of first nursing qualification and highest level of education, two factors based on the type of work institution, and one factor based on bed capacity.

5. Discussion

Most participants agreed that the implementation of nurse prescribing under supervision would improve the outcomes of patients, clinicians, and organizations in Saudi Arabia. Comparable findings from other countries have shown that expanding prescribing practices to nurses would increase the benefits of and access to healthcare services and medicine (Armstrong, 2015; Casey et al., 2020; Fox et al., 2022; Gielen et al., 2014; Nuttall, 2018), provide patient-centered care to maintain the continuity of care (Armstrong, 2015; Casey et al., 2020; Fox et al., 2022; Nuttall, 2018), improve nurse experiences and satisfaction (Armstrong, 2015; Casey et al., 2020; Cousins and Donnell, 2012; Fox et al., 2022; Gielen et al., 2014; Lennon and Fallon, 2018), and enhance the safety and effectiveness of clinical practices and optimal care (Armstrong, 2015; Azami et al., 2018; Tinelli et al., 2015; Wilson et al., 2021). Although previous studies identified several professional advancements for nurses as outcomes for prescribing practices (Fox et al., 2022; McBrien, 2015; Romero-Collado et al., 2014), this study did not explore the potential professional advancements that are expected when granting nurses prescribing authority. Therefore, future studies should evaluate the potential impact of nurse prescribing practices on professional advancements and outcomes.

Using objective patient outcome measures, our findings are supported by a previous study in Saudi Arabia that evaluated the benefits of nurse-led heart failure programs in which nurses had the authority to optimize medication therapy, which lead to a reduction in all-cause mortality (Bdeir et al., 2015). However, this study was conducted at a cardiac center in a tertiary hospital in Saudi Arabia. Thus, to optimize patient outcomes, it is crucial for nurse administrators and leaders at different regulatory and operational levels in Saudi Arabia to evaluate the implementation of nurse prescribing practices considering the possible benefits.

Furthermore, the rated facilitating factors for nurse prescribing reported in this study were consistent with those reported in previous studies. For instance, organizational and collegial factors that influenced nurse prescribing include support from their organization as well as nurses and non-nursing colleagues (Bowskill et al., 2013; Brimblecombe and Dobel-Ober, 2022; Fox et al., 2022; Smith et al., 2014; Snell et al., 2022; Stenner et al., 2010), having a mentor and continuing professional training (Carey and Courtenay, 2008; Carey et al., 2010; Courtenay and Carey, 2008; Snell et al., 2022; Stenner et al., 2010), unrestricted scope of practice (Lockwood and Fealy, 2008; Muyambi et al., 2018; Stenner et al., 2010), and financial reward for prescribing practice

Table 6
Nurses' views on educational organizations for prescribing nurses (N = 379).

		Which organization(s) do you think are the most appropriate to develop and deliver educational programs for nurse prescribing?												Chi-Square		
		Other		Individual health services		Community colleges		Universities		Health services with community colleges		Health services with universities				
		N	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	Cramer's V	X^2	*P*-Value
Gender	Male	2	2.3	26	29.5	6	6.8	28	31.8	3	3.4	23	26.1	0.147	8.23	0.144
	Female	1	0.3	105	36.1	30	10.3	63	21.6	15	5.2	77	26.5			
SCFHS Classification	Nurse Technician	2	2	40	40	13	13	19	19	4	4	22	22	0.191	27.76	0.002**
	Nurse Specialist	0	0	81	38.2	20	9.4	51	24.1	11	5.2	49	23.1			
	Nurse Senior Specialist or Consultant	1	1.5	10	14.9	3	4.5	21	31.3	3	4.5	29	43.3			
Country of education	Saudi	3	1.6	52	26.9	26	13.5	47	24.4	8	4.1	57	29.5	0.215	17.47	0.004**
	Others	0	0	78	42.4	10	5.4	43	23.4	10	5.4	43	23.4			
Level of education	Diploma	1	1.8	22	39.3	15	26.8	11	19.6	1	1.8	6	10.7	0.274	56.93	<0.001***
	Bachelor's	1	0.5	85	41.3	14	6.8	51	24.8	13	6.3	42	20.4			
	Master's or post-graduate certificate or Doctoral	1	0.9	24	20.5	7	6	29	24.8	4	3.4	52	44.4			
Type of institution	Governmental - MOH	0	0	112	37.7	29	9.8	72	24.2	16	5.4	68	22.9	0.210	50.12	<0.001***
	Governmental - non-MOH	2	5.6	7	19.4	7	19.4	9	25	1	2.8	10	27.8			
	Private sectors	0	0	8	66.7	8	66.7	1	8.3	0	0	3	25			
	Academic (university, college, or faculty)	1	2.9	4	11.8	0	0	9	26.5	1	2.9	19	55.9			
Bed Capacity	< 200 beds	2	1	73	37.8	20	10.4	47	24.4	12	6.2	39	20.2	0.096	6.41	0.780
	200–399 beds	0	0	30	33.7	8	9	22	24.7	3	3.4	26	29.2			
	≥ 400 beds	0	0	24	38.1	8	21.7	13	20.6	2	3.2	16	25.4			

Note. MOH: Ministry of Health.

Table 7
Distribution of nurses' views on the qualifications for becoming a prescriber (*N* = 379).

		Level of qualification for nurses to prescribe								Chi-Square		
		None		Graduate certificate OR Workplace certificate of completion		Master's degree		Doctoral degree				
		N	%	*N*	%	*N*	%	*N*	%	Cramer's V	X^2	*P*-Value
Gender	Male	3	3.4	16	18.2	54	61.4	15	17	0.201	15.28	0.002**
	Female	10	3.4	83	28.5	111	38.1	87	29.9			
SCFHS Classification	Nurse Technician	5	5	29	29	25	25	41	41	0.186	26.09	<0.001***
	Nurse Specialist	7	3.3	54	25.5	100	47.2	51	24.1			
	Nurse Senior Specialist or Consultant	1	1.5	16	23.9	40	59.7	10	14.9			
Country of education	Saudi	3	1.6	48	24.9	104	53.9	38	19.7	0.234	20.62	<0.001***
	Others	10	5.4	51	27.7	61	33.2	62	33.7			
Level of education	Diploma	2	3.6	19	33.9	12	21.4	23	41.1	0.212	33.98	<0.001***
	Bachelor's	10	4.9	54	26.2	80	38.8	62	30.1			
	Master's or post-graduate certificate or Doctoral	1	0.9	26	22.2	73	62.4	17	14.5			
Type of institution	Governmental - MOH	12	4	75	25.3	125	42.1	85	28.6	0.132	19.92	0.018*
	Governmental - non-MOH	1	2.8	12	33.3	19	52.8	4	11.1			
	Private sectors	0	0	2	16.7	2	16.7	8	66.7			
	Academic (university, college, or faculty)	0	0	10	29.4	19	55.9	5	14.7			
Bed capacity	< 200 beds	9	4.7	48	24.9	74	38.3	62	32.1	0.100	6.86	0.334
	200–399 beds	1	1.1	23	25.8	44	49.4	21	23.6			
	≥ 400 beds	3	4.8	18	28.6	28	44.4	14	22.2			

Note. MOH: Ministry of Health.

Table 8
Nurses' views on undertaking an additional 10 h for Continuing Professional Development per year to become prescribers (*N* = 379).

Do you think that RN prescribers should be required to undertake an additional 10 h of Continuing Professional Development per year to meet registration requirements as a prescriber?		Unsure		No		Yes		Chi-Square		
		N	%	*N*	%	*N*	%	Cramer's V	X^2	*P*-Value
Gender	Male	20	22.7	11	12.5	57	64.8	0.101	3.85	0.146
	Female	88	30.2	49	16.8	154	52.9			
SCFHS Classification	Nurse Technician	27	27	19	19	54	54	0.119	5.88	0.250
	Nurse Specialist	67	31.6	33	15.6	112	52.8			
	Nurse Senior Specialist or Consultant	14	20.9	8	11.9	45	67.2			
Country of education	Saudi	48	24.9	25	13	120	62.2	0.135	6.87	0.032*
	Others	59	32.1	35	19	90	48.9			
Level of education	Diploma	17	30.4	13	23.2	26	46.4	0.138	14.52	0.006**
	Bachelor's	65	31.6	37	18	104	50.5			
	Master's or post-graduate certificate or Doctoral degree	26	22.2	10	8.5	81	69.2			
Type of institution	Governmental - MOH	88	29.6	46	15.5	163	54.9	0.078	4.62	0.593
	Governmental - non-MOH	10	27.8	8	22.2	18	50			
	Private sectors	4	33.3	2	16.7	6	50			
	Academic (university, college, or faculty	6	17.6	4	11.8	24	70.6			
Bed capacity	< 200 beds	55	28.5	39	20.2	99	51.3	0.106	7.79	0.100
	200–399 beds	26	29.2	7	7.9	56	62.9			
	≥ 400 beds	21	33.3	10	15.9	32	50.8			
Do you think that RNs who complete an accredited nurse prescribing program should be eligible for a qualification allowance (increase in salary/benefits) or similar?										
Gender	Male	3	3.4	1	1.1	20	22.7	0.158	9.48	0.024*
	Female	28	9.6	15	5.2	83	28.5			
SCFHS Classification	Nurse Technician	12	12	6	6	26	26	0.085	5.49	0.483
	Nurse Specialist	15	7.1	9	4.2	60	28.3			
	Nurse Senior Specialist or Consultant	4	6	1	1.5	17	25.4			
Country of education	Saudi	14	7.3	6	3.1	51	26.4	0.079	2.36	0.501
	Others	17	9.2	10	5.4	52	28.3			
Level of education	Diploma	8	14.3	5	8.9	15	26.8	0.150	17.05	0.009**
	Bachelor's	19	9.2	10	4.9	60	29.1			
	Master's or post-graduate certificate or Doctoral degree	4	3.4	60	29.1	28	23.9			
Type of institution	Governmental - MOH	27	9.1	12	4	79	26.6	0.072	5.96	0.774
	Governmental – non-MOH	3	8.3	2	5.6	9	25			
	Private sectors	1	8.3	1	8.3	5	41.7			
	Academic (university, college, or faculty	0	0	1	2.9	23	29.4			
Bed capacity	< 200 beds	21	10.9	8	4.1	50	25.9	0.063	2.73	0.842
	200–399 beds	5	5.6	5	5.6	25	28.1			
	≥ 400 beds	5	7.9	2	3.2	18	28.6			

Note. MOH: Ministry of Health.

(Maddox et al., 2016). Other factors include acceptance and support from patients (McCann and Clark, 2008) and perceived confidence and competency (Carey et al., 2014; Maddox et al., 2016). Therefore, nurse leaders at regulatory bodies and healthcare facilities in Saudi Arabia should consider the factors that may influence the implementation of prescribing under supervision. The implementation of prescribing practices may necessitate modifications to the scope of practice, educational preparation, essential training, and collaborations with physicians to ensure proper expansion of nurse prescribing practices under supervision.

Our findings show that nurses' perceptions of prescribing under supervision vary significantly based on demographic characteristics. Regarding becoming a prescriber, the present study indicates significant differences based on the level of education, which is consistent with the findings of Bartosiewicz and Różański (2019), who reported that nurses with higher qualifications show higher readiness to prescribe. Furthermore, our findings identified significant differences in the likelihood, motivators, and minimum years of experience and qualifications for becoming prescribers based on demographic characteristics. Moreover, nurses' views on having a qualification allowance upon completion of an accredited nurse prescribing program differed significantly based on gender and level of education, however, a previous study found that basic training would be sufficient to prescribe certain medications (Romero-Collado et al., 2017). Therefore, future studies in Saudi Arabia should evaluate the appropriateness of nursing curriculum to provide sufficient prescribing knowledge in comparison to accredited prescribing programs.

Similarly, our findings identified significant differences in nurses' views on the type of organizations delivering training programs for nurse prescribing and required continuing education for professional development. These demographic characteristics were mainly gender, country of education, education level, and professional classification. Thus, future research should identify how demographic characteristics influence nurses' perceptions of prescribing under supervision.

To the best of our knowledge, this is the first study to explore nurses' readiness to prescribe medicines under supervision in Saudi Arabia. However, the study had some limitations. The cross-sectional design used in this study may have led to self-reporting bias as participants may have overreported desirable attitudes toward prescribing practices. Furthermore, the use of convenience sampling and bivariate analysis may limit the generalizability of the findings. However, this study is an initial step toward establishing a knowledge base of nurses' readiness to prescribe under supervision in Saudi Arabia. Thus, a large-scale study with a representative sample of Saudi Arabia that utilizes advanced statistical analyses may provide a better understanding of nurses' readiness to prescribe under supervision.

The study findings have important implications for patient care. Nurses in this study favored prescribing under supervision to improve patient care outcomes. This is an opportunity to expand the benefits of health services, including easy access to healthcare. However, the implementation of such practices necessitates stakeholders from clinical practice and academia to determine the minimum educational and training requirements for nurses to prescribe under supervision. Collaborative agreements may facilitate mentorship for nurse prescribers to ensure safety and high quality of the prescribing practices.

6. Conclusion

Nurses in Saudi Arabia favor prescribing medicine under supervision. They perceive that prescribing under supervision may improve outcomes relevant to patients, nurses, and healthcare institutions. Similarly, the facilitating factors in implementing prescribing practices were perceived as promoting the proper implementation of such practices. Nurses' perception of prescribing under supervision varied based on demographic characteristics such as gender, level of education, and country of education. These findings are important for evaluating the proper utilization of nurse prescribing practices under supervision to optimize healthcare outcomes.

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Ethical considerations

The study was reviewed and approved by the Institutional Review Board at King Saud University (IRB# E-23–7523) and Central Institutional Review Board at Ministry of Health (IRB# 23–14 E).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jsps.2023.05.019.

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