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Relationship between Demographic Factors and Entrepreneurial Competencies among Healthcare Nurses

Amany Ahmed Abdrbo[1*], Salwa Hassanein[2], Somaya Ahmed Bayoumy[3,4]

[1]Department of Nursing, Almoosa College of Health Sciences, 31982 Al-Ahsa, Saudi Arabia

[2]Faculty of Nursing, Cairo University, Giza Governorate 12613, Egypt

[3]Nursing Administration Department, Faculty of Nursing, Cairo University, 12613 Giza Governorate, Egypt

[4]School of Nursing, Badr University in Cairo, 11829 Cairo Governorate, Egypt

**Corresponding Author's Email: aamanyahmed@hotmail.com*

ABSTRACT

Background: As global socioeconomic pressures increase, particularly in healthcare, nurses need entrepreneurial competencies to adapt to growing demands. However, these competencies have not been widely recognised in nursing, especially in Saudi Arabia. **Objective:** This study aimed to assess the relationship between demographic factors and entrepreneurial competencies among nurses in Saudi Arabia. **Methods:** A descriptive cross-sectional correlational study was conducted using the snowball sampling technique. Nurses from a tertiary hospital were recruited, and data were collected via an online survey. The survey measured entrepreneurial intentions and entrepreneurship competencies such as self-confidence, control-oriented behaviour, opportunity utilisation, determination, innovativeness, and risk-bearing. The statistical analysis was used to identify significant differences based on demographic factors. Descriptive statistics, *T*-tests, ANOVA, and correlation analyses examine relationships between demographics, entrepreneurship competencies, and intention. **Results:** Nurses displayed moderate to high levels of entrepreneurship competencies. Significant differences were found in competencies based on nationality, management position, management training, employment status, and future self-employment intentions ($p < 0.05$). Additionally, certain competencies varied with marital status, income level, age, years of experience, and having children ($p < 0.05$). Higher entrepreneurship competencies were positively associated with the desire to start a business. **Conclusion:** The findings highlight the need to foster entrepreneurial competencies among nurses in Saudi Arabia. Future entrepreneurial potential can be enhanced by strengthening management training, fostering diversity, cultivating supportive environments, and nurturing forward-thinking mindsets.

Keywords: Demographic Factors; Entrepreneurial Competencies; Healthcare Nurses

INTRODUCTION

The global healthcare landscape is witnessing significant changes due to various socioeconomic factors, including job competitiveness, the ageing population, and the prevalence of chronic diseases (Pochat-Cottilloux, 2019; Mani & Goniewicz, 2024). To meet the evolving healthcare needs efficiently and effectively, there is a growing emphasis on nurses developing their entrepreneurial knowledge and skills (Iseselo *et al.*, 2019). While this shift is recognised worldwide, it is particularly relevant in regions like Saudi Arabia, where the healthcare system faces unique challenges such as workforce shortages and increasing demand for specialised care due to rapid population growth and rising chronic disease rates (Al-Hanawi, Khan, & Al-Borie, 2019). Addressing these specific challenges through enhanced nursing entrepreneurship is crucial for improving healthcare delivery and meeting the region's unique healthcare needs. Entrepreneurship, defined as the process of creating something new with value by taking risks and seeking opportunities, has become a crucial aspect of the healthcare industry (Dalcher, 2019; Van As & Cook, 2024). The entrepreneur is the person who founded the business and is willing to face risk and uncertainty and look to take advantage of opportunities (Venkataraman, 2019). In the context of nursing, entrepreneurship competencies play a pivotal role in enabling nurses to take initiative, identify opportunities, and potentially venture into self-employment (Reid & Sanders,

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2019). These foundational competencies, such as strategic thinking, contemporary knowledge and skills, operational relationships and networking, success-oriented action, and competitiveness, provide the basis for further learning and skill development in business management (Arnaert *et al*., 2018; Bagheri & Akbari, 2018; Rangwala, 2018). However, despite nurses constituting a significant proportion of the healthcare workforce, their potential for entrepreneurship has not been widely recognised in the nursing profession, including in Saudi Arabia (Kingma, 2018). This study aimed to assess the relationship between demographic factors and entrepreneurship competencies among nurses in Saudi Arabia.

While there is an increasing focus on entrepreneurship in nursing, studies on this topic in the Middle East, particularly in Saudi Arabia, remain scarce (Colichi *et al*., 2019). Most existing research on nursing entrepreneurship has been conducted in countries like the United States, Canada, the United Kingdom, Australia, Brazil, and Iran. These studies have highlighted various factors influencing entrepreneurship, such as location, economy, legislation, culture, and, most importantly, entrepreneurship skills. However, the need for further research and innovation in nurse education to promote entrepreneurship competencies remains an ongoing process (Dehghanzadeh *et al*., 2016; Pennetta, Anglani & Mathews, 2024). To assess entrepreneurship competencies among nurses in Saudi Arabia and identify opportunities for fostering entrepreneurial skills, this study aimed to bridge the knowledge gap in the region's healthcare landscape. By exploring the current state of nurse entrepreneurship in Saudi Arabia, this research seeks to shed light on the potential benefits of integrating entrepreneurship education into nursing curricula. The findings from this study are expected to contribute to the promotion of nurse entrepreneurship and innovation, addressing specific healthcare challenges in the country and supporting a diverse and dynamic healthcare workforce.

Healthcare entrepreneurship fosters innovation, enhances delivery, and meets emerging needs by creating novel solutions, processes, and services that improve patient care (Chandra, 2020; Kulkov *et al*., 2023). Entrepreneurs bridge healthcare gaps, introduce technologies, and tackle challenges like age-related vision issues or demographic-specific concerns (Vannucci & Weinstein, 2017). Nurse entrepreneurs enhance patient care through innovative solutions like healthcare apps (Jakobsen *et al.*, 2021), stimulate economic growth by launching startups, and tackle healthcare challenges. Internal hospital entrepreneurship competencies encompass a blend of clinical expertise, comprehensive management knowledge, and motivational leadership to thrive in the current unpredictable healthcare landscape (Henry, 2023) through addressing ageing population needs, combating chronic diseases, and offering cost-effective solutions. Overcoming barriers, tailored education, and collaboration foster nurse entrepreneurship. Integrating entrepreneurial skills into nursing education empowers nurses to innovate, adapt, and lead interdisciplinary teams, aligning with industry demands and strengthening healthcare systems (Clipper, 2023).

The resource-based view (RBV) theory can be used to study the entrepreneurial abilities of healthcare nurses. According to RBV, a firm's competitive advantage and performance depend on the unique and valuable resources it possesses (Kellermanns *et al*., 2016). In the context of healthcare, nurses have specific competencies that can be seen as resources contributing to their success in entrepreneurship. These competencies include specialised knowledge, skills, and experiences in patient care, such as assessing patient needs, developing treatment plans, effective communication, and compassionate care. These competencies give healthcare nurses a competitive advantage, as they are difficult to imitate and unique within the healthcare industry (Knebel & Greiner, 2003).

RBV emphasises the significance of resources in achieving superior performance. Healthcare nurses who possess entrepreneurial competencies can utilise their unique resources to create value and generate economic returns (Pereira & Bamel, 2021). By identifying opportunities and applying their competencies, they can establish innovative healthcare service models, develop new products or technologies, and improve existing processes. Additionally, their competencies allow them to effectively manage risks, adapt to changes in the healthcare environment, and build strong relationships with patients, healthcare professionals, and stakeholders. These capabilities enable entrepreneurial nurses to achieve exceptional performance and sustainable competitive advantage in the healthcare industry.

METHODOLOGY

Design: A descriptive cross-sectional design was utilised

Sample:

The snowball sampling technique was used to recruit nurses from a tertiary hospital. The initial sample was identified by sending a survey link through the nursing director, who distributed it to the nursing staff. Participants were then asked to recruit other nurses they knew by sharing the link. This process was repeated until the required sample size was achieved. This research design effectively accesses hard-to-reach populations, leveraging social networks to enhance participant recruitment. By fostering trust within these networks, snowball sampling can improve response rates and yield more reliable data (Kirchherr & Charles, 2018). The sample size was calculated using G*Power 3 and based on the correlation test using an alpha Type 1 error at 5% with the power of 80.0%, and according to Cohen (2013), the medium effect size of the correlation test is .30. The estimated required sample size for this study is about 195 subjects.

Study Instruments

The questionnaire was administered to nurses and included the following:

1. A demographic sheet including age, gender, marital status, management position, management training, and economic status. The entrepreneurship scale that was developed by Yilmaz and Sünbül (2009) to show entrepreneurial tendencies and characteristics which contains 32 items consists of 7 subscales: Self-confidence (8 items), utilizing the opportunities (7 items), breaking risk (4 items), control-oriented (4 items), determination (4 items), innovativeness (3 items), and will to succeed (2 items) which are measured on a Likert scale of Very often" (5) "Often" (4) "Sometimes" (3), "Seldom" (2), "Never" (1). The scale was self-administered, the survey validity and reliability were tested by Tiftik and Zincirkiran (2014), factor analysis indicating that the factors are gathered in seven dimensions and the Cronbach Alpha reliability coefficient of the scale has been calculated as 0.91. Reliability in the current study was tested for each subscale using Cronbach's Alpha Coefficient which was 0.65, 0.85, 0.55, 0.80, 0.73, 0.77, and 0.86 consecutively. Content validity is established through expert reviews and agreement of the questionnaire items to ensure comprehensive coverage of relevant concepts. Questions related to entrepreneurial intentions explored the following aspects: Are you currently self-employed, do you plan to be self-employed in the foreseeable future, estimate the probability (0-100%) that you will start your own business in the next year? and estimate the probability (0-100%) you will start your own business in the next 5 years.

Statistical Design

Data entry and statistical analysis are conducted using SPSS software, specifically version 24. Descriptive statistics, such as frequencies and percentages for qualitative variables and means and standard deviations for quantitative variables, are employed. A significant level of $p < 0.05$ is utilised. Furthermore, *t*-tests, ANOVA, and correlation analyses are employed to examine relationships between demographics, entrepreneurship competencies, and entrepreneurship intention.

Ethical Consideration

The study received ethical from the research center at Almoosa College of Health Sciences, Saudi Arabia with reference number ARC-20.11.1 on 10th November, 2020.

RESULTS

Table 1 presents the demographic characteristics of the study sample, consisting of 188 nurses. Most of the nurses were Saudi nationals (54.3%), and the female gender was predominant (84.0%). Most of them were married (81.3%) and did not hold a management position (69.4%), although 38.7% had management training. In terms of educational level, 58.3% held a bachelor's degree, followed by 26.2% with a diploma and 15.5% with post-graduate qualifications. Regarding income, 44.0% reported earning more than 10000 SR, 42.4% earned between SR 5000- SR 10000, and 13.6% earned less than SR 5000. Most participants had children (71.8%) and were not currently self-employed (73.7%). However, a considerable proportion (74.7%) expressed a plan to be self-employed in the foreseeable future.

Nurses' average age was 36.99 years, with average years of experience in nursing being 12.60 years;

findings showed moderate to high levels of regard for entrepreneurship competencies such as self-confidence (M=4.06, SD=0.61), control-oriented behaviour (M=4.14, SD=0.60), utilisation of opportunities (M=3.92, SD=0.65), determination (M=3.92, SD=0.66), will to succeed (M=3.76, SD=0.83), innovativeness (M=3.64, SD=0.74), and bearing risk (M=3.55, SD=0.67).

Table 1: Descriptive Statistics for Demographic Characteristics of the Study Sample and Main Variables

Variable		N	%
Nationality	Saudi	102	54.3
	Non-Saudi	86	45.7
Gender	Female	158	84.0
	Male	30	16.0
Marital Status	Single	35	18.7
	Married	152	81.3
Having Management position	Yes	57	30.6
	No	193	69.4
Having Management Training	Yes	72	38.7
	No	114	61.3
Educational Level	Diploma	49	26.2
	Bachelor	109	58.3
	Post-graduates	29	15.5
Income	Less than SR 5000	25	13.6
	Between SR 5000- SR 10000	78	42.4
	More than 10000 SR	81	44.0
Having children	Yes	135	71.8
	No	53	28.2
Currently self employed	Yes	49	26.3
	No	137	73.7
Plan to be self-employed in the foreseeable future	Yes	139	74.7
	No	47	25.3

Variable		Mean	SD	Min.	Max.	95% CI	
						Lower Limit	Upper Limit
Age (years)		36.99	8.73	24.00	63.00	35.55	38.25
Years of Experience in Nursing		12.60	8.16	1.00	34.00	11.47	13.89
Years of Experience in the current hospital		8.06	6.29	0.00	27.00	7.19	9.04
Years of Experience in the current unit		6.77	5.83	1.00	27.00	5.92	7.64
If you have any children How Many		1.82	1.56	0.00	7.00	1.56	2.03
Entrepreneurship Competencies	Self-confidence	4.06	0.61	2.63	6.88	3.95	4.13
	Utilizing the Opportunities	3.92	0.65	2.29	5.00	3.81	4.00
	Bearing Risk	3.55	0.67	1.75	5.00	3.41	3.61
	Control Oriented	4.14	0.60	2.00	5.00	4.04	4.22
	Determination	3.92	0.66	2.00	5.00	3.79	3.99
	Innovativeness	3.64	0.74	1.33	5.00	3.50	3.73
	Will to Succeed	3.76	0.83	1.00	5.00	3.61	3.85

Table 2 indicated that Saudi nurses demonstrated significantly higher levels of self-confidence (t=2.88, p<0.001), utilising opportunities (t=2.90, p<0.001), bearing risk (t=2.51, p=0.01), and will succeed (t=1.94, p=0.05) compared to non-Saudi nurses. There are no significant differences between the two genders across all seven competencies assessed. Nurses with management positions demonstrated significantly higher levels of self-confidence (t=2.49, p=0.01), control-oriented behaviour (t=2.65, p=0.01), determination (t=3.40, p=0.00), innovativeness (t=4.01, p=0.00), and the will to succeed (t=3.40, p=0.00) compared to nurses without management positions. Nurses who received management training demonstrated significantly higher levels of self-confidence (t=2.32, p=0.02), utilising opportunities (t=2.02, p=0.05), innovativeness (t=4.05, p=0.00), and the will to succeed (t=3.46, p=0.00) compared to those who did not receive management training.

There were no significant differences in entrepreneurship competencies between nurses with and without children. Nurses who are currently employed demonstrated significantly higher levels of utilising opportunities

(t=2.19, p=0.03), bearing risk (t=2.54, p=0.01), innovativeness (t=2.91, p=0.00), and the will to succeed (t=3.32, p=0.00) compared to those who are not currently employed. Nurses who are planning to be self-employed in the foreseeable future demonstrated significantly higher levels of self-confidence (t=3.32, p=0.00), utilising opportunities (t=4.11, p=0.00), bearing risk (t=3.91, p=0.00), control-oriented behaviour (t=3.20, p=0.00), determination (t=3.62, p=0.00), innovativeness (t=4.79, p=0.00), and the will to succeed (t=5.81, p=0.00) compared to those who are not planning to be self-employed.

Table 2: t-tests of Entrepreneurship Competencies by Demographics

Nationality						
Variable	**Saudi**		**Non-Saudi**		***t***	***p-value***
	M	**SD**	**M**	**SD**		
Self-confidence	4.17	0.65	3.92	0.53	2.88	0.00
Utilizing the Opportunities	4.05	0.61	3.78	0.67	2.90	0.00
Bearing Risk	3.66	0.64	3.42	0.68	2.51	0.01
Control Oriented	4.16	0.64	4.12	0.56	0.54	0.59
Determination	4.00	0.64	3.83	0.68	1.82	0.07
Innovativeness	3.73	0.72	3.53	0.77	1.86	0.06
Will to Succeed	3.87	0.81	3.63	0.85	1.94	0.05
Gender						
Variable	**Female**		**Male**		***t***	***p*-value**
	M	**SD**	**M**	**SD**		
Self-confidence	4.05	0.61	4.07	0.62	-0.16	0.88
Utilizing the Opportunities	3.93	0.65	3.87	0.66	0.48	0.63
Bearing Risk	3.55	0.67	3.53	0.68	0.12	0.91
Control Oriented	4.15	0.59	4.13	0.68	0.17	0.86
Determination	3.93	0.67	3.88	0.63	0.41	0.68
Innovativeness	3.60	0.75	3.81	0.70	-1.40	0.16
Will to Succeed	3.74	0.82	3.88	0.92	-0.88	0.38
Having Management Position						
Variable	**Yes**		**No**		***t***	***p*-value**
	Mean	**SD**	**M**	**SD**		
Self-confidence	4.22	0.57	3.98	0.61	2.49	0.01
Utilizing the Opportunities	4.04	0.66	3.86	0.64	1.75	0.08
Bearing Risk	3.64	0.66	3.49	0.67	1.34	0.18
Control Oriented	4.31	0.52	4.06	0.62	2.65	0.01
Determination	4.15	0.52	3.81	0.69	3.40	0.00
Innovativeness	3.95	0.64	3.49	0.75	4.01	0.00
Will to Succeed	4.05	0.80	3.62	0.81	3.40	0.00
Receiving Management Training						
Variable	**Yes**		**No**		***t***	***p*-value**
	M	**SD**	**M**	**SD**		
Self-confidence	4.18	0.59	3.97	0.61	2.32	0.02
Utilizing the Opportunities	4.04	0.66	3.84	0.63	2.02	0.05
Bearing Risk	3.65	0.70	3.47	0.64	1.83	0.07
Control Oriented	4.22	0.59	4.09	0.60	1.52	0.13
Determination	4.03	0.71	3.84	0.62	1.91	0.06
Innovativeness	3.90	0.63	3.46	0.76	4.05	0.00
Will to Succeed	4.01	0.76	3.59	0.83	3.46	0.00
Having Children						
Variable	**Yes**		**No**		***t***	***p*-value**
	M	SD	M	SD		
Self-confidence	4.05	0.66	4.07	0.46	-0.20	0.84
Utilizing the Opportunities	3.92	0.68	3.93	0.57	-0.12	0.90
Bearing Risk	3.58	0.69	3.47	0.59	1.03	0.31
Control Oriented	4.11	0.63	4.22	0.53	-1.14	0.26
Determination	3.94	0.67	3.86	0.63	0.80	0.42
Innovativeness	3.67	0.77	3.55	0.67	1.03	0.30
Will to Succeed	3.77	0.90	3.73	0.64	0.35	0.73

Currently Employed						
Variable	**Yes**		**No**		***t***	***p*-value**
	M	**SD**	**M**	**SD**		
Self-confidence	4.16	0.66	4.01	0.59	1.49	0.14
Utilizing the Opportunities	4.09	0.61	3.86	0.65	2.19	0.03
Bearing Risk	3.74	0.74	3.47	0.62	2.54	0.01
Control Oriented	4.23	0.61	4.10	0.60	1.35	0.18
Determination	3.92	0.77	3.91	0.62	0.10	0.92
Innovativeness	3.89	0.76	3.54	0.72	2.91	0.00
Will to Succeed	4.08	0.74	3.64	0.83	3.32	0.00
Planning to be Self-employed in the Foreseeable Future						
Variable	**Yes**		**No**		***t***	***p*-value**
	M	**SD**	**M**	**SD**		
Self-confidence	4.14	0.59	3.81	0.59	3.32	0.00
Utilizing the Opportunities	4.03	0.62	3.60	0.63	4.11	0.00
Bearing Risk	3.65	0.68	3.22	0.52	3.91	0.00
Control Oriented	4.22	0.57	3.90	0.63	3.20	0.00
Determination	4.01	0.64	3.62	0.66	3.62	0.00
Innovativeness	3.77	0.72	3.21	0.65	4.79	0.00
Will to Succeed	3.94	0.71	3.19	0.92	5.81	0.00

Table 3 showed that there were no significant differences in most entrepreneurship competencies based on marital status. There were significant differences in utilising opportunities (F=4.19, p=0.01), determination (F=2.71, p=0.05), and innovativeness (F=2.85, p=0.04) among nurses with Ph.D. education level. There were significant differences in self-confidence (F=4.69, p=0.01), utilising opportunities (F=5.46, p=0.01), bearing risk (F=6.22, p=0.00), control-oriented behaviour (F=5.01, p=0.01), determination (F=12.47, p=0.00), innovativeness (F=9.05, p=0.00), and the will to succeed (F=3.96, p=0.02) among nurses with more than 10000 SR income level.

Table 3: ANOVA tests of Entrepreneurship Competencies by Demographics

Marital Status								
Variable	**Single**		**Married**		**Divorced**		***F***	***p*-value**
	M	**SD**	**M**	**SD**	**M**	**SD**		
Self-confidence	4.08	0.45	4.04	0.64	4.29	0.77	0.49	0.61
Utilizing the Opportunities	4.02	0.55	3.89	0.67	4.00	0.48	0.55	0.58
Bearing Risk	3.47	0.58	3.56	0.68	3.54	0.80	0.25	0.78
Control Oriented	4.26	0.51	4.10	0.62	4.54	0.51	2.47	0.09
Determination	3.90	0.60	3.90	0.67	4.33	0.70	1.23	0.29
Innovativeness	3.55	0.62	3.64	0.78	3.94	0.71	0.74	0.48
Will to Succeed	3.73	0.56	3.74	0.88	4.33	0.75	1.53	0.22

Education										
Variable	**Diploma**		**Bachelor**		**Master**		**Doctoral**		***F***	***p*-value**
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**		
Self-confidence	3.89	0.78	4.13	0.51	4.06	0.54	4.09	0.87	1.69	0.17
Utilizing the Opportunities	3.65	0.74	4.02	0.55	3.99	0.71	4.21	0.86	4.19	0.01
Bearing Risk	3.48	0.66	3.53	0.65	3.67	0.71	4.00	1.02	1.06	0.37
Control Oriented	3.94	0.66	4.21	0.56	4.18	0.57	4.38	0.83	2.51	0.06
Determination	3.71	0.73	3.96	0.60	4.04	0.68	4.38	0.92	2.71	0.05
Innovativeness	3.42	0.85	3.65	0.72	3.92	0.52	3.92	0.63	2.85	0.04
Will to Succeed	3.52	1.08	3.83	0.70	3.96	0.63	3.38	1.11	2.42	0.07

Total Personal Income								
Variable	**< SR 5000**		**SR 5000- SR 10000**		**> 10000 SR**		***F***	***p*-value**
	M	**SD**	**M**	**SD**	**M**	**SD**		
Self-confidence	3.86	0.57	3.96	0.65	4.20	0.55	4.69	0.01
Utilizing the Opportunities	3.69	0.60	3.80	0.63	4.08	0.63	5.46	0.01
Bearing Risk	3.34	0.72	3.39	0.63	3.72	0.63	6.22	0.00
Control Oriented	3.94	0.56	4.04	0.63	4.28	0.55	5.01	0.01
Determination	3.58	0.58	3.75	0.70	4.15	0.54	12.47	0.00
Innovativeness	3.27	0.64	3.49	0.76	3.86	0.69	9.05	0.00
Will to Succeed	3.52	0.70	3.62	0.88	3.93	0.78	3.96	0.02

Table 4 indicated that all entrepreneurship competencies such as self-confidence, utilizing opportunities, bearing risk, control-oriented behaviour, determination, innovativeness, and the will to succeed show positive correlations with the desire to start one's own business in the next year and the next 5 years indicating that individuals with higher entrepreneurship competencies are more likely to consider starting their own business.

Age and years of experience in nursing, the current hospital, and the current unit significantly show a negative correlation with bearing risk competency. Years of experience in the current unit had negative correlations with some entrepreneurship competencies: self-confidence, utilising opportunities, and bearing risk, indicating that more experienced individuals tend to exhibit lower levels of certain entrepreneurial skills. Additionally, having more children shows positive correlations with some entrepreneurship competencies, suggesting that individuals with children may demonstrate certain entrepreneurial attributes, namely determination and innovativeness.

Table 4: Correlation Matrix between Entrepreneurship Competencies and the Study Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Start your own business in the next year	44.34	32.68	-												
Start your own business in the next 5 years	60.96	37.25	0.56**	-											
Age	36.80	9.05	0.18*	0.1	-										
Years of Experience in nursing	12.60	8.16	0.20**	0.1	0.88**	-									
Years of Experience in the current hospital	8.06	6.29	0.1	0.0	0.68**	0.76**	-								
Years of experience in the current unit	6.77	5.83	0.0	-0.1	0.65**	0.72**	0.83**	-							
Children Number	1.82	1.56	0.1	0.0	0.45**	0.45**	0.46**	0.34**	-						
Self-confidence	4.06	0.61	0.20**	0.20**	0.0	0.0	0.0	-0.15*	0.1	-					
Utilizing the Opportunities	3.92	0.65	0.27**	0.19*	0.0	0.0	0.0	-0.16*	0.1	0.68**	-				
Bearing risk	3.55	0.67	0.27**	0.19*	-0.15*	-0.15*	-0.16*	-0.28**	0.1	0.41**	0.59**	-			

Control oriented	4.14	0.60	0.28**	0.27**	0.0	0.0	0.1	-0.1	0.1	0.65**	0.70**	0.50**	-		
Determination	3.92	0.66	0.31**	0.23**	0.0	0.1	0.1	-0.1	0.15*	0.59**	0.66**	0.54**	0.75**	-	
Innovativeness	3.64	0.74	0.33**	0.19*	0.1	0.1	0.1	0.0	0.21**	0.56**	0.69**	0.52**	0.69**	0.67**	-
Will to Succeed	3.76	0.83	0.43**	0.39**	0.0	0.0	0.0	-0.1	0.1	0.55**	0.63**	0.41**	0.66**	0.57**	0.69**

DISCUSSION

The findings of this study enrich the current knowledge base by presenting evidence of entrepreneurial competencies among nurses from Saudi Arabia. The study sample consisted of 188 nurses, with a predominant representation of Saudi nationals and female gender. Most nurses were married and did not hold a management position, but a significant proportion had received management training. Regarding education, most held a bachelor's degree, followed by a diploma and postgraduate qualifications. The income distribution showed that 44.0% earned more than 10,000 SR.

A considerable proportion of nurses expressed a plan to be self-employed in the foreseeable future, reflecting an interest in entrepreneurship within the nursing profession. The nurses demonstrated moderate to high levels of various entrepreneurship competencies, including self-confidence, control-oriented behaviour, utilisation of opportunities, determination, will to succeed, innovativeness, and bearing risk. These findings suggest the potential for nursing professionals to play an entrepreneurial role within the healthcare industry and contribute to its growth and development. Saudi nurses exhibited higher levels of self-confidence, utilising opportunities, and bearing risk compared to non-Saudi nurses. These findings suggest that cultural and contextual factors may play a role in shaping nurses' entrepreneurship competencies. The higher self-confidence and willingness to take risks among Saudi nurses may be influenced by cultural norms and attitudes towards entrepreneurship in Saudi Arabia. These results underscore the importance of cultural intelligence and diversity in fostering entrepreneurship within the healthcare workforce. To promote entrepreneurial behaviour among non-Saudi nurses, healthcare organisations can focus on providing cultural intelligence training and creating a supportive and inclusive environment that embraces the diverse perspectives and innovative ideas of all nurses, regardless of their cultural background.

The findings indicated that gender does not significantly influence nurses' entrepreneurship competencies. However, Vázquez-Parra, García-González, and Ramírez-Montoya (2021) identified among university students from different disciplines significant distinctions in sub-competencies and elements concerning gender and entrepreneurship. Generally, women tended to perceive a greater level of proficiency than men in domains such as leadership, social value, and entrepreneurial management. Nurses holding management positions, those who received management training, and those currently employed demonstrated significantly higher levels of self-confidence, control-oriented behaviour, determination, innovativeness, and the will to succeed compared to their counterparts. These findings align with existing literature that highlights the positive influence of entrepreneurial leadership on employees' innovative work behaviour, their creative self-efficacy, and perceived support for innovation, and that self-efficacy and perceived support for innovation mediate the relationship between entrepreneurial leadership and innovative work behaviour (Akbari *et al*., 2021). Nurses in management positions are likely to be exposed to greater decision-making autonomy, which may boost their self-confidence and sense of control, contributing to their entrepreneurial mindset. Similarly, those who receive management training may gain valuable knowledge and skills, empowering them to identify and seize opportunities, be more determined in achieving their goals, and demonstrate innovation in problem-solving.

There were no significant differences in entrepreneurship competencies between nurses with and without children, challenging the notion that parenthood affects entrepreneurial skills. Parental responsibilities do not impede nurses' capacity to cultivate essential skills and may even bolster them through effective time management and multitasking abilities. Experiences related to parenthood contribute to competency development, thereby enhancing entrepreneurial potential. This finding affirms that nurses can adeptly manage their work-life equilibrium, exhibiting comparable levels of entrepreneurship competencies

irrespective of their parental status. Nevertheless, additional research is imperative to corroborate this discovery, as diverse factors might still impact individuals' entrepreneurial proficiencies.

The positive relationship between planning to be self-employed and higher entrepreneurship competencies suggests that individuals with entrepreneurial aspirations tend to develop and cultivate these skills proactively. However, a descriptive correlational study among junior and senior students indicated that the relationship between entrepreneurial intention and entrepreneurial competencies is weak and moderate, with the personality traits, entrepreneurship tendency, and career adaptability scores showing a significant but limited correlation, while factors such as entrepreneurship tendency and being a fourth-year student have a significant influence on career adaptability (İspir, Elibol, & Sönmez, 2019). Developing these competencies can enhance nurses' entrepreneurial intention, increasing the likelihood of them starting their ventures or engaging in entrepreneurial activities within the healthcare industry.

There were no significant differences in most entrepreneurship competencies based on marital status. Possibly, the qualities required for thriving in entrepreneurship, such as a willingness to take risks, determination, inventiveness, and the ability to bounce back, have no connection with whether or not a person is married. The key abilities for entrepreneurship mainly stem from practical knowledge, academic background, and individual characteristics (Liu, 2021), rather than being influenced by one's marital status. Furthermore, nurses with a Ph.D. education level showed significant differences in utilising opportunities, determination, and innovativeness. These findings support the notion that higher levels of education may contribute to the development of specific entrepreneurship competencies among nurses, as advanced education can enhance critical thinking, creativity, and strategic planning abilities. Abidi *et al*. (2022) find that faculty members with a Ph.D. are more proactive and innovative.

Additionally, nurses with higher income levels demonstrated significant differences in various entrepreneurship competencies, suggesting that greater financial stability may positively impact their confidence in taking risks, seeking opportunities, and exhibiting innovation. These findings underscore the importance of promoting continuous learning and professional development, as well as providing support and resources to nurses with entrepreneurial aspirations. In alignment, a cross-sectional study found that most undergraduate nursing students have a high level of entrepreneurial leadership, with the level of study year class and parental income being significant factors associated with entrepreneurial leadership (Sarnkhaowkhom *et al*., 2022).

Notably, a series of entrepreneurship competencies, including self-confidence, utilising opportunities, bearing risk, control-oriented behaviour, determination, innovativeness, and the will to succeed, exhibit positive correlations with the desire to establish one's own business within both the upcoming year and the subsequent five years. This finding strongly implies that nurses who possess greater degrees of entrepreneurial skills are more inclined to think about launching their firms. It emphasises how crucial these abilities are for inspiring nurses to consider starting their businesses in the industry. However, the influence of certain factors complicates this relationship. Age and years of nursing experience, especially within the current hospital and unit, demonstrate negative correlations with the competency of bearing risk. This suggests that older, more experienced individuals may be less inclined to engage in the risk-taking behaviour associated with entrepreneurship. It may also reflect burnout or a reluctance to innovate among highly experienced nurses.

Moreover, the impact of years of experience within the current unit extends to specific entrepreneurship competencies. Particularly, higher experience levels in the current unit correlate negatively with self-confidence, utilising opportunities, and bearing risk competencies. This suggests that increased experience in a specific unit may lead to diminished levels of these entrepreneurial skills, possibly due to the entrenchment of routine or a conservative mindset. Interestingly, the number of children an individual has exhibits positive correlations with select entrepreneurship competencies, specifically determination and innovativeness. This implies that individuals with children may possess certain entrepreneurial attributes, potentially stemming from the responsibilities and challenges associated with parenthood.

Overall, these results highlighted the importance of recognising the diverse factors that may influence entrepreneurship competencies in the nursing profession and the need for promoting an inclusive and

supportive environment that fosters the development of essential entrepreneurial skills among all nurses, regardless of their gender, parental status, or marital status.

Limitation

This study's limitations include a small sample size, reliance on self-reported data, and a cross-sectional design, which may limit interpretations. Additionally, cultural and contextual factors, along with snowball sampling, may introduce bias. Future research should employ larger, more diverse samples, longitudinal designs, and qualitative approaches to gain deeper insights into nurses' entrepreneurial competencies and their impact on healthcare advancement.

CONCLUSION

This research sheds light on the importance of entrepreneurship competencies among nurses and their potential implications for the healthcare industry. The findings indicate that nurses displayed varying levels of self-confidence, utilization of opportunities, determination, bearing risk, control-oriented behavior, innovativeness, and the will to succeed. Interestingly, Saudi nurses demonstrated significantly higher levels of self-confidence, utilizing opportunities, and bearing risk compared to non-Saudi nurses, suggesting potential cultural or contextual influences on entrepreneurship competencies. Additionally, nurses with management positions and those who received management training exhibited higher levels of various entrepreneurship competencies, highlighting the impact of leadership roles and management education in fostering essential entrepreneurial skills among nursing professionals.

The relationship between entrepreneurship competencies and the intention to start a business further emphasises the relevance of these skills in fostering entrepreneurial aspirations among nurses. As healthcare faces evolving challenges, such as an ageing population and the prevalence of chronic diseases, developing entrepreneurial skills among nurses becomes crucial for innovation, adaptability, and effective healthcare delivery. By recognising and nurturing the entrepreneurial potential within the nursing workforce, healthcare systems can enhance their capacity to address these demands efficiently and economically.

This study contributes to the growing body of literature on entrepreneurship in nursing and underscores the need for further research and targeted interventions to support and develop entrepreneurial skills among nurses. As the healthcare landscape continues to evolve, nurses must be equipped with the competencies necessary to seize opportunities, promote innovative solutions, and contribute effectively to the advancement of the healthcare industry. By fostering a culture of entrepreneurship within the nursing profession, we can create a more resilient and forward-thinking healthcare workforce that drives positive change and meets the evolving needs of the population.

Recommendation

Several recommendations can be made to enhance nurses' entrepreneurship competencies and promote their role in advancing the healthcare industry. Firstly, nursing education programmes should incorporate entrepreneurship training and skill development to prepare nurses for innovative roles within healthcare systems. Providing courses on business management, leadership, and opportunity recognition can empower nurses to pursue self-employment and create value-added services within their practice. Additionally, offering management training opportunities to nurses can further enhance their self-confidence, utilisation of opportunities, determination, and innovativeness, as observed in the study. Investing in leadership development programmes for nurses with management positions can also nurture their entrepreneurial spirit and foster creative solutions to address healthcare challenges.

Secondly, organisations and policymakers should create a supportive environment for nurses to explore entrepreneurship opportunities. Initiatives like mentorship programmes, business incubators, and funding support can encourage nurses to develop and implement innovative healthcare solutions. Recognising and rewarding nurses who demonstrate entrepreneurial skills and take initiative in improving patient care and healthcare delivery can further incentivise and promote entrepreneurship among nursing professionals. By addressing these recommendations, healthcare systems can harness the untapped potential of nurses as entrepreneurs, leading to improved healthcare services and more dynamic and resilient healthcare systems.

Future research should focus on conducting longitudinal studies to track the development of entrepreneurship competencies among nurses over time. Qualitative research exploring nurses' motivations and barriers to entrepreneurship can provide valuable insights. Comparative studies can assess how healthcare policies impact nurse entrepreneurship. Additionally, research on the impact of nurses' entrepreneurship competencies on healthcare outcomes is essential. Overall, these research areas can contribute to fostering innovation and improving healthcare systems.

Conflict of Interest

The authors declare that they have no competing interests.

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