

## RESEARCH ARTICLE

# Gender role moderates correlation between learning needs and behavioural intention of sexual health care in female nurses

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**Abstract**

**Aim:** This study evaluated the correlation between learning needs and behavioural intention of sexual health care in female Registered Nurses and to assess the moderating effect of gender role on this relationship.

**Design:** In this cross-sectional questionnaire-based survey, a convenience sampling of female Registered Nurses was included from Chung Shan Medical University Hospital, Taiwan.

**Methods:** Three questionnaires were used to obtain self-reported data on learning needs, behavioural intention and gender role.

**Results:** Based on gender role scores, 11.8% of participants were feminine, 10.0% were masculine, 31.0% were androgynous and 47.2% were undifferentiated. Significant positive correlations between learning needs and behaviour intention were observed in the total population as well as in undifferentiated, feminine and androgynous nurses (all  $p < .05$ ). Learning needs were positively associated with the behavioural intention of sexual health care in female nurses, which was moderated by gender role ( $F = 2.868, p = .036$ ).

**KEYWORDS**

behavioural intention, gender role, learning needs, nursing education, sexual health care

## 1 | INTRODUCTION

The World Health Organization (WHO) has long committed to promote sexual health, and its definition has been evolved since 1974 (World Health Organization, 1975, 2006). Sexual health care focuses on the health of male and female reproductive systems, which is recently broadened to cover well-being over a wide range of life domains that may affect or be secondary to sexuality and sexual relationships, such as physical, mental, emotional and social perspectives (Edwards & Coleman, 2004; World Health Organization, 2006). Hence, the WHO is urging healthcare providers to offer a full range of sexual healthcare services in a positive and respectful manner (World Health Organization, 2006). Among healthcare

professionals, nurses are often on the front line of counselling and resolving any issues regarding sexual health, sexuality and sexual rights (Evans, 2013; Fennell & Grant, 2019; Santa Maria et al., 2017).

Several lines of evidence indicate that lack of knowledge and skills is one of the major barriers that prevents nurses from providing sexual healthcare services in clinical practice (Hoekstra et al., 2012; Jaarsma et al., 2010; Jonsdottir et al., 2016), so nursing education in sexual health has drawn much attention. A questionnaire survey of Taiwanese nursing students suggests that nursing students with more knowledge of sexual health care are more likely to provide better sexual health care in a positive attitude (Huang et al., 2013; Sung et al., 2015; Tsai et al., 2014). However, a recent review points out that although almost all nursing students express

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a positive attitude about sexual health care, many nursing students do not have sufficient knowledge and skills to lead a conversation about sexual health and deliver sexual health care (Blakey & Aveyard, 2017). Furthermore, continuing nursing education in sexual health and clinical practice is essential for the provision of quality sexual healthcare services, because some sexual health-related problems may be specialty-specific, which have to be approached differently (Annerstedt & Glasdam, 2019; Johnston, 2009; Quinn & Happell, 2015; Steinke et al., 2011).

## 2 | BACKGROUND

Learning needs is considered as the gap in knowledge and skills that makes it impossible to fulfil the duty (Pilcher, 2016). According to the theory of planned behaviour, behavioural intention is defined as the subjective probability that a person will engage in a particular behaviour (Godin & Kok, 1996). It has been proposed that nurses' attitude reinforces their behavioural intention to perform-specific medical procedures (Bertani et al., 2016; Huang et al., 2018; Hung et al., 2016). A positive correlation between knowledge and attitude to sexual health care has been observed in nursing students (Sung et al., 2015), while the relationship between learning needs and behaviour intention of sexual health care in Registered Nurses remains to be investigated.

Furthermore, gender role refers to the tendency of a person in expressing certain behaviours and attitudes that are consistent with biological sex-specific social norms (Ciocca et al., 2019). People can be classified into one of four gender roles: masculine, feminine, androgynous and undifferentiated regardless of their biological sex (Bem, 1977). Previous studies have found that although nursing students realized their critical role in sexual health care, their intention to provide the relevant services were limited (Huang et al., 2013; Lee et al., 2017; Tsai et al., 2013). It has been suggested that gender role affects caring behaviour and critical thinking in Taiwanese nursing students (Liu et al., 2019). However, the extent to which gender role influences the behavioural intention of Registered Nurses to deliver sexual health care is unclear. Although nursing is no longer an occupation only for women worldwide, most Registered Nurses are female in Taiwan, the United States, Canada, Australia, the United Kingdom, Germany, Spain and Italy (Yang et al., 2017). Therefore, the objectives of the present study were to evaluate the correlation between learning needs and behavioural intention, to provide sexual health care in female Registered Nurses and to examine whether gender role acts as a moderator of their association.

## 3 | MATERIALS AND METHODS

### 3.1 | Study design and participants

The present study is a descriptive, cross-sectional, questionnaire-based study. A convenience sampling was recruited the female

Registered Nurses working in a hemodialysis centre, rehabilitation unit, medical-surgical unit, obstetrics and gynaecology ward, psychiatric ward, respiratory care unit (RCU) and intensive care unit (ICU) at our Hospital from November 2016–April 2017. The study protocol was approved by the Institutional Review Board of Chung Shan Medical University Hospital, Taiwan. (Number CS13138) and written informed consent was obtained from all participants.

### 3.2 | Measures

#### 3.2.1 | Demographic questionnaire

The participants' age, work years in nursing, marital status, religion, education level and work unit were collected.

#### 3.2.2 | Gender role

A Chinese version of the Gender role Questionnaire was developed as previously described (Wang et al., 1997). Briefly, this self-reported questionnaire includes 7 items of instrumental traits (instrumental score, IS) and 7 items of expressiveness traits (expressiveness score, ES) with coefficient  $\alpha = 0.77$  and  $\alpha = 0.78$ , respectively (Wang et al., 1997). Based on median numbers of IS (15) and ES (19), respondents were categorized into four gender role groups: masculinity (IS score > 15; ES score  $\leq$  19), femininity (IS score  $\leq$  15; ES score > 19), androgyny (IS score > 15; ES score > 19) and undifferentiated (IS score  $\leq$  15; ES score  $\leq$  19) (Wang et al., 1997). In the present study, values of coefficient  $\alpha$  were 0.853, 0.705 and 0.770 for gender role, the IS scale and the ES scale, respectively.

#### 3.2.3 | Learning needs of sexual health care

A Chinese version of the Learning Needs for Addressing Patients' Sexual Health Concerns (LNAPSHC) was developed as previously described (Tsai et al., 2013), which consists of 24 items in three domains: Sexuality in health and illness (6 items), Communication about patient's intimate relationships (9 items) and Approaches to sexual health care (9 items). Each item was rated by the respondent on a 1 to 7 scale (1 = never or almost never need; 7 = always or almost need). Cronbach  $\alpha$  values were 0.985, 0.955, 0.986 and 0.983 for total needs, Sexuality in health and illness, Communication on patients' intimate relationships and Approaches to sexual health care, respectively (Tsai et al., 2013).

#### 3.2.4 | Behavioural intention of sexual health care

The Nursing Interventions on Sexual Health (NISH) was developed based on the Permission, Limited Information, Specific Suggestion

and Intensive Therapy (PLISSIT) Model as previously described (Huang et al., 2012). The NISH scale assessed the behavioural intention of sexual health care of participating nurses. The NISH scale comprises 19 items under three domains: permission, limited information and specific suggestion. Each item was rated on a 1–7 scale (1 = strongly impossible; 7 = strongly possible). Cronbach's  $\alpha$  values were 0.975, 0.93, 0.94 and 0.95 for the total score of the behavioural intention, permission, limited information and specific suggestion, respectively (Huang et al., 2012).

### 3.3 | Statistical analysis

Patients' demographics were presented as  $N$  (%). Mean and standard deviation were calculated for each item of the questionnaire. The behavioural intention of each gender role group was analysed by  $t$  test or one-way ANOVA. Pearson's correlation analysis determined the correlation between learning needs and behavioural intention among four gender role groups, and the results were presented as a correlation coefficient. The multivariate analysis was applied to evaluate the interaction items of gender role with learning needs via two-way ANOVA. The multivariate analysis included three steps: at step 1 (by Crude model), whether the moderating (interaction) effect of gender role exists would be tested; at step 2 (by Adjusted model), if the interaction existed at step 1, whether the interaction still exist under controlling the influence of confounders (variables: education levels, working units) would be examined; at step 3 (by adjusted model: test gender role), if the interaction of the gender role did not exist at step 1 and step 2 and whether the gender role was a significantly effective factor would be evaluated. Results were presented as  $F$ -statistic and  $p$ -value for gender role, learning needs, or interaction term of gender role with learning needs in the multivariate analysis model.

All the statistical assessments were two-tailed and considered significant as  $p < .05$ . Furthermore, a post hoc pair-wise analysis among gender role was performed along with the significant interaction subsequently. Results were presented as estimated beta value and 95% CI with considering the Šidák approach.  $p < \text{Šidák-adjusted alpha} = 0.0085$  were considered significant for the post hoc analysis. Data were analysed using Statistical Package for Social Sciences version 20 (SPSS, IBM, Armonk, NY, USA).

## 4 | RESULTS

### 4.1 | Participants' characteristics

In this study, 451 valid samples were sent back among 471 distributed questionnaires (response rate = 95.7%). Participants' demographic characteristics are summarized in Table 1. Most female Registered Nurses were younger than 40 years of age (94%), less than 10 years of working experience (67.8%), married (65.4%), no specific religion

**TABLE 1** Patients' demographics and the corresponding behavioural intention scores ( $N = 451$ )

	Number of patients	Behavioural intention	$p$ -value
	$N$ (%)	Mean $\pm$ SD	
Age, years			.259
$\leq 30$	225 (49.9)	3.34 $\pm$ 1.14	
31–40	200 (44.3)	3.35 $\pm$ 1.19	
$\geq 41$	26 (5.8)	3.73 $\pm$ 1.17	
Working experience, years			.395
$\leq 5$	171 (37.9)	3.41 $\pm$ 1.04	
6–10	135 (29.9)	3.26 $\pm$ 1.33	
11–15	89 (19.7)	3.34 $\pm$ 1.13	
$> 15$	56 (12.4)	3.56 $\pm$ 1.15	
Marital status			.895
Married	295 (65.4)	3.37 $\pm$ 1.14	
Not married	156 (34.6)	3.36 $\pm$ 1.22	
Religion			.458
None	218 (48.3)	3.35 $\pm$ 1.13	
Buddhism and Taoism	195 (43.2)	3.34 $\pm$ 1.21	
Others	38 (8.4)	3.59 $\pm$ 1.11	
Education level			.030
Junior college (Associate)	56 (12.4)	3.58 $\pm$ 1.1	
University (Bachelor)	356 (78.9)	3.3 $\pm$ 1.14	
Graduate school (Master)	39 (8.6)	3.73 $\pm$ 1.34	
Working units			.004
Medical–surgical	166 (36.8)	3.23 $\pm$ 1.15	
Hemodialysis	30 (6.7)	3.55 $\pm$ 1.04	
Rehabilitation	76 (16.9)	3.59 $\pm$ 1.14	
Obstetrics and Gynecology	19 (4.2)	3.78 $\pm$ 1.12	
Psychiatric	18 (4)	4.07 $\pm$ 1.22	
Others (RCU and ICU)	142 (31.5)	3.23 $\pm$ 1.16	
Gender role			<.001
Androgynous	140 (31.0)	3.61 $\pm$ 1.14	
Masculine	45 (10.0)	3.41 $\pm$ 1.11	
Feminine	53 (11.8)	3.56 $\pm$ 1.17	
Undifferentiated	213 (47.2)	3.15 $\pm$ 1.15	

Note: Values in bold indicated statistical significance ( $p < .05$ ).

(48.3%), bachelor degree (78.9%) and worked in the medical–surgical unit (36.8%). Furthermore, the behavioural intention of sexual health care was significantly different in various education levels ( $p = .03$ ) or working units ( $p = .004$ ) (Table 1).

**TABLE 2** Comparisons of behavioural intention and learning needs among four gender role types

	Undifferentiated ①	Feminine ②	Masculine ③	Androgynous ④	<i>p</i> -value	Significant pair-wise of multiple comparison
Participants, N (%)	213 (47.2%)	53 (11.8%)	45 (10.0%)	140 (31.0%)		
Behavioural intention	3.15 ± 1.15	3.56 ± 1.17	3.42 ± 1.11	3.61 ± 1.14	<b>.001</b>	④ > ①
Learning needs						
Total needs	4.38 ± 1.15	4.78 ± 1.13	4.81 ± 1.07	4.85 ± 1.16	<b>.001</b>	④ > ①
Sexuality in health and illness	4.54 ± 1.22	4.85 ± 1.06	4.84 ± 1.05	4.98 ± 1.15	<b>.004</b>	④ > ①
Communication on patients' intimate relationships	4.42 ± 1.21	4.75 ± 1.3	4.83 ± 1.07	4.9 ± 1.23	<b>.002</b>	④ > ①
Approaches to sexual health care	4.25 ± 1.29	4.76 ± 1.18	4.78 ± 1.38	4.72 ± 1.35	<b>.001</b>	④ > ①

Note: Results were presented as mean ± SD.

Values in bold denoted statistical significance ( $p < .05$ ).

#### 4.2 | The correlations between learning needs and behavioural intention in four types of gender role

Regarding gender role, 47.2% of participating female nurses were undifferentiated, feminine (11.8%), masculine (10.0%) and androgynous (31.0%) (Table 2). Learning needs and behavioural intention were significantly different among the four gender role groups (all  $p < .05$ ). The results of the pair-wise comparison revealed that androgynous nurses had significantly higher behavioural intention and learning needs than undifferentiated nurses (Table 2). Furthermore, significant positive correlations between learning needs and behaviour intention were observed in the total population, undifferentiated, feminine and androgynous groups (all  $p < .05$ ), but no significance in the masculine group (Table 3). Correlation coefficients between behavioural intention and learning needs (total needs) were 0.437, 0.436, 0.409 and 0.512 in the total population, undifferentiated, feminine and androgynous groups, respectively. Besides, positive correlations between behavioural intention and learning needs in undifferentiated, feminine and androgynous nurses, but not in masculine nurses, were presented as scatter plots (Figure 1).

#### 4.3 | Gender role as a moderator on the correlation between learning needs and behavioural intention

The multivariate analyses indicated that the main effect of gender role was not significant, although it was significantly associated with behaviour intention in univariate analysis (data not shown). In the subsequent multivariate analyses, the behavioural intention was treated as a dependent variable, and gender role and learning needs were used as independent variables. At step 1, gender role was not significantly associated with behavioural intention ( $p = .143$ ). However, the result of interaction terms (total needs × gender role) indicated that the moderating (interaction) effect of gender role was found on the relationship between learning needs (total needs) and behavioural intention ( $F = 3.156$ ,  $p = .025$ ). At step 2, the moderating (interaction) effect of gender role remained significant after

adjusting for confounders included education level and working units ( $F = 2.868$ ,  $p = .036$ ) (Table 4).

Furthermore, gender role and sexuality in the health and illness domain were used as independent variables. At step 1, the moderating effect of gender role on the relationship between sexuality in health and illness and the behavioural intention was significant ( $F = 4.329$ ,  $p = .005$ ). At step 2, the moderating effect of gender role remained significant after adjusting for education level and working units ( $F = 4.907$ ,  $p = .002$ ) (Table 4).

Subsequently, gender role and communication on patients' intimate relationships domain were used as independent variables. At step 1, the moderating effect of gender role on the relationship between communication on patients' intimate relationships and the behavioural intention was not significant ( $F = 2.171$ ,  $p = .091$ ) (Table 4). At step 3, the multivariate analysis also indicated that gender role was not a significant effective factor ( $F = 1.830$ ,  $p = .141$ ), after adjusting for education level and working units (data not shown).

Finally, gender role and approaches to sexual healthcare domain were used as independent variables. The moderating effect of gender role in the relationship between approaches to sexual health care and the behavioural intention was significant ( $F = 2.785$ ,  $p = .040$ ). However, at step 2, the moderating effect of gender role was not significant after adjusting for education level and working units ( $F = 2.153$ ,  $p = .093$ ). Furthermore, at step 3, multivariate analysis indicated that gender role is not a significantly effective factor ( $F = 1.827$ ,  $p = .142$ ) (data not shown).

#### 4.4 | Multiple comparisons of behavioural intention with the interaction between learning needs and gender role

The results in Table 5 showed that in the undifferentiated, feminine and androgynous groups, gender role significantly moderated the relationships between learning needs (total needs and the domain of sexuality in health and illness) and behavioural intention. In addition, post hoc probing of significant moderation effects was conducted to

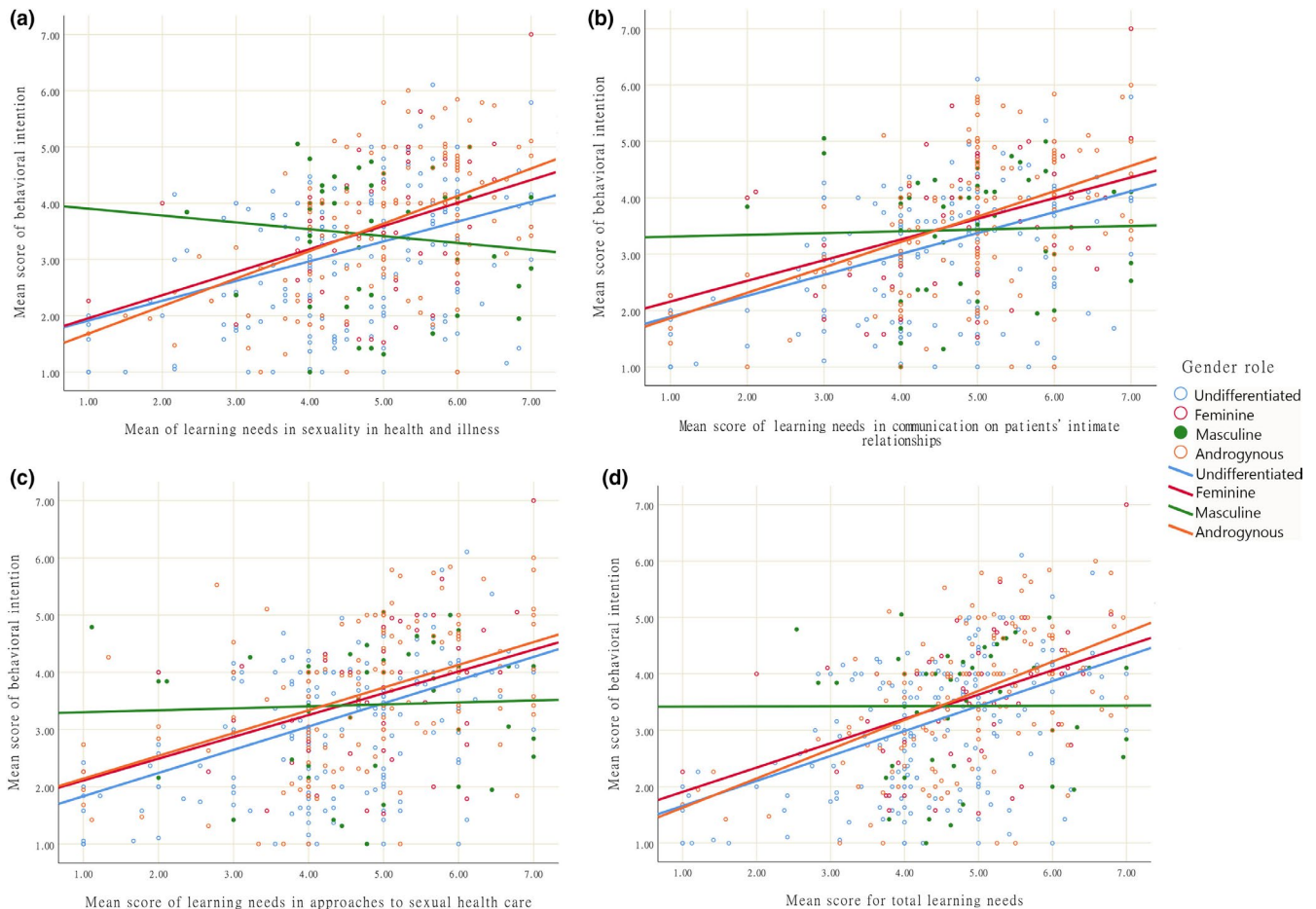
**TABLE 3** Correlations between learning needs and behavioural intention in the total population and gender role groups

Domain of learning needs	Total	Undifferentiated	Feminine	Masculine	Androgynous
Total needs	0.437***	0.436***	0.409**	0.002	0.512**
Sexuality in health and illness	0.376***	0.366***	0.373**	-0.134	0.473***
Communication on patients' intimate relationships	0.407***	0.384***	0.401**	0.027	0.485***
Approaches to sexual health care	0.419***	0.444***	0.375**	0.051	0.458***

Note: Results were presented as coefficients correlation, *r*.

\*\**p* < .01.

\*\*\**p* < .001, denoted statistical significance.



**FIGURE 1** Scatter plot of behavioural intention and learning needs in (a) sexuality in health and illness, (b) communication on patients' intimate relationships, (c) approaches to sexual health care and (d) total needs. The dot values indicated the corresponding mean score of learning needs versus behavioural intention and the line referred to the correlation between learning needs and behavioural intention in the specific gender role group

decode the nature of the interaction terms. For behavioural intention post hoc probes of the significant interaction for learning needs (total needs) (Table S1), a significant positive correlation was found between androgynous and masculine nurses ( $\beta = 0.480, p = .004$ ). For behavioural intention post hoc probes of the significant interaction for learning needs in sexuality in the health and illness domain (Table S1), a significant positive correlation was found between androgynous and masculine nurses ( $\beta = 0.646, p < .001$ ). However, a significant negative correlation was shown between feminine and

undifferentiated ( $\beta = -0.550, p = .007$ ) and between masculine and undifferentiated nurses ( $\beta = -0.497, p = .002$ ).

### 5 | DISCUSSION

In the present study, nearly half of participating female Registered Nurses (47.2%) were undifferentiated, followed by 31.0% androgynous, 11.8% feminine and 10.0% masculine in terms of their gender

Parameters*	Crude model		Adjusted model†	
	F-statistic	p-value	F-statistic	p-value
Total learning needs				
Gender role	1.816	0.143	1.205	.308
Total needs	39.565	<.001	38.944	<.001
Total needs × Gender role	3.156	.025	2.868	.036
Domain: Sexuality in health and illness				
Gender role	2.404	0.067	1.673	.172
Sexuality	22.725	<.001	20.578	<.001
Sexuality × Gender role	4.329	.005	4.907	.002
Domain: Communication on patients' intimate relationships				
Gender role	2.227	.084	-	
Communication	33.292	<.001	-	
Communication × Gender role	2.171	.091	-	
Domain: Approaches to sexual health care				
Gender role	2.128	.096	1.488	.217
Approaches	40.188	<.001	40.406	<.001
Approaches × Gender role	2.785	.040	2.153	.093

Note: Values in bold denoted statistical significance ( $p < .05$ ).

\*The total needs and three domains were centralized in this analysis.

†Education level and working unit were adjusted in multivariate model.

role. The proportion of uni-dimension of masculine and feminine is low. This is similar to the results of the gender role study of university students in Taiwan (Chen et al., 2014), which is a low proportion of masculine and feminine and most androgynous have turned to be undifferentiated. It is speculated that it may be related to Taiwan's high socialization and high development of gender equality education to result in a significant reduction of uni-dimension of masculine and feminine. The undifferentiated group is the most proportion in this research, which indicated that under the trend of gender mainstreaming, society tends to have multiple values. However, it also reflects a phenomenon that the undifferentiated is still a psychological conflict with sexual health care. Positive values for sexual health care in female nurses still need to be determined. Androgynous nurses had significantly higher behavioural intention and learning needs than undifferentiated nurses. There were significantly positive correlations between learning needs and behaviour intention in the total population and female nurses with undifferentiated, androgynous or feminine traits. Gender role was a moderator in the association between learning needs and behavioural intentions. Furthermore, the current results suggested that the interaction between learning needs and gender role was important to female nurses' behavioural intentions to deliver sexual health care.

Biological sex (male vs. female) is determined based on the anatomic and physiological characteristics of a person, while gender role (masculine, feminine, androgynous or undifferentiated) is more focused on psychological perspectives. (Bem, 1977; Ciocca et al., 2019) Apart from two traditional gender roles, masculine and feminine, people who exhibit both traits harmoniously are classified

**TABLE 4** Multivariate analyses of the moderating effect of gender role on the relationship between learning needs and behavioural intention

as androgynous, while people who do not exhibit those characteristics are categorized as undifferentiated (Ciocca et al., 2019). Children learn gender roles from their parents and schools (Boothroyd & Cross, 2017; Ehrtmann et al., 2019). However, the definitions of various gender role categories are culture-specific, which are evolving with time (Ciocca et al., 2019).

In the present study, 47.2% of female nurses were undifferentiated. Regardless, two studies conducted in the United States reported differently. Approximate half of female nursing students were androgynous (Thompson et al., 2011), and most Registered Nurses (37%) in correctional settings were feminine (El Ghaziri et al., 2019). Hence, it was assumed that the distribution of gender role groups among female nursing students and Registered Nurses may vary depending on education, culture, society, workplace and type of job to some degree. Since the present study applied a Chinese version of the Gender Role Questionnaire that has been widely used in Taiwan (Hsu & Wu, 2004; Wang et al., 1997; Wang & Wang, 2007), the possible influence of distinct questionnaires used in various studies on gender role distribution cannot be ruled out.

Androgynous people have been suggested to have higher self-efficacy, self-esteem, personal competence, adaptability and life satisfaction, as well as better ability to manage with stressful situations (Hosokawa et al., 2016; Juster et al., 2016; Lipinska-Grobelny, 2011). Furthermore, androgynous nurses are more willing to take more initiative at work with a greater sense of accomplishment (Ushiro & Nakayama, 2010). Consistent with the above concept, the present study found that among participating female nurses, androgynous nurses had a higher behavioural intention and learning needs

**TABLE 5** Multiple comparisons of behavioural intention with the interaction between learning needs and gender role

Learning needs <sup>a</sup>	Gender role	B (95% CI)
Total need	Androgynous	<b>0.510 (0.361, 0.659)</b>
	Masculine	0.029 (-0.259, 0.317)
	Feminine	<b>0.409 (0.158, 0.66)</b>
	Undifferentiated	<b>0.423 (0.302, 0.544)</b>
Sexuality in health and illness	Androgynous	<b>0.482 (0.329, 0.635)</b>
	Masculine	-0.164 (-0.461, 0.132)
	Feminine	<b>0.386 (0.115, 0.656)</b>
	Undifferentiated	<b>0.333 (0.216, 0.45)</b>

Note: B (95% CI) is the slope with 95% confidence intervals of total learning needs (or sexuality in health and illness) associated behavioural intention.

Values in bold denoted statistical significance ( $p < .05$ ).

<sup>a</sup>Only total need and sexuality in health and illness, which significantly interacted with gender role, were retained in this analysis.

regarding sexual health care, suggesting the existence of relationships among learning needs, behavioural intention and gender role. In addition, the current findings implied that compared to female nurses with other gender role traits, androgynous nurses appear to be highly self-motivated to learn more knowledge and skills about sexual health and more committed to deliver sexual healthcare services.

Sexual health can be disturbed by chronic illness, surgical procedures, trauma and sexual abuse (Morotti et al., 2014; Steinke et al., 2011; Zoldbrod, 2015). Besides caring for patients, nurses also provide counselling and disseminate sexual health knowledge, thereby promoting sexual health to public (Evans, 2013; Fennell & Grant, 2019; Santa Maria et al., 2017). Hence, the extent to which nursing students are competent in sexual health care has drawn much attention (Blakey & Aveyard, 2017; Sung et al., 2015). To gain a more thorough overview of undergraduate nursing education in sexual health care in Taiwan, two self-reported questionnaires were previously developed and validated, LNAPSHC and NISH, to survey nursing students' learning needs and behavioural intention of sexual health care, respectively (Huang et al., 2012; Tsai et al., 2013).

In this study, both LNAPSHC and NISH were used to evaluate the association between learning needs and behavioural intention of sexual health care in registered female nurses in Taiwan. The present study demonstrated a significant positive correlation between learning needs and behaviour intention in all participating female nurses, suggesting that female nurses who enquired more learning needs were more likely to have the better behavioural intention in sexual health care. Hence, nursing education based on learning needs would enhance the behavioural intention of nursing students and nurses to deliver sexual healthcare services. Consistent with this hypothesis, sexual healthcare education could enhance self-efficacy and practice among nurses and nursing students (Jonsdottir et al., 2016; Sung et al., 2015).

Gender role influences nursing students' caring behaviour (Liu et al., 2019) and Registered Nurses' work outcomes (El Ghaziri et al., 2019), implying the indirect influence of gender role on behavioural intention. In the present study, positive correlations between learning needs and behaviour intention were still valid in all gender role groups, except the masculine group, which may be partially due to the small number of participants. The current results also demonstrated the moderating effect of gender role on the relationship between learning needs (total needs and the domain of sexuality in health and illness) and behavioural intention in the total population, along with the androgynous, feminine, and undifferentiated group.

The results suggested that gender role itself may not exert the main effect on behavioural intention of sexual health care, but it is a moderator to strengthen the positive relationship between the learning needs and behavioural intention of sexual health care. Particularly, the results imply that knowledge in "sexuality in health and illness" should be emphasized and gender role should be taken into consideration to develop and implement the curriculum. The curricula of both pre-registered and continuous nursing education should be substantially improved, allowing nursing students and Registered Nurses to understand their critical role in sexual health, to learn adequate and updated knowledge and skills regarding sexual health, and to have a strong behavioural intention to actively provide personalized sexual healthcare services. For nurses with masculine characteristics, suggesting nursing administrators or educators should incorporate the concept of a gender perspective into sexual health care continuing education courses to enhance gender awareness. Especially reinforce the knowledge of the aspect of sexuality in health and illness, to encourage the self-confidence and proactive characteristics for masculinity, strengthen the importance of sexual health in holistic health, and the responsibility and the functional role of nursing. Moreover, the social learning theory and strategies were applied to stimulate and maintain adult learning motivation to arrange the androgynous nurses with leadership to learn together with the undifferentiated, masculine and feminine nurses, providing the opportunities for enhancement, imitation, design and integration of multiple teaching methods that optimize the development of gender roles of continuing education, increase the effectiveness of sexual healthcare learning and improve the sexual health care of behaviour intentions.

## 6 | LIMITATIONS

There were several limitations in this study. First of all, the use of a convenience sample from female nurses working at a medical centre in central Taiwan limited the generalizability of the results. In the future, the selection should expand to male nurses, different hospitals by districts to increase the understanding of the impact of gender roles by genders on the behaviour intention of sexual health care. More studies with large sample sizes in different geographic regions

should be performed to confirm the current results. Secondly, several characteristics of participants, such as participant's experience and education in relation to sexual health care, may act as confounders but have not been investigated in this study. In addition, the present study analysed self-reported data derived from three validated questionnaires. The possibility that responders may misunderstand and incorrectly complete certain questions cannot be ruled out. Further studies exploring the association between gender role, learning needs and sexual health care will be warranted to explore the specific behaviours in sexual health care, such as assessing sexual function and providing therapy to patients. Finally, this study is convenience sampling from only one hospital, participants may modify an aspect of their behaviour in response to their awareness of being observed, which may lead to bias of The Hawthorne Effect. Considering timely explanations for the research purpose and research design objectively and clearly, the questionnaire is answered anonymously to ensure that the content of the answer will not affect the rights and interests to reduce the psychological pressure and the Hawthorne effect.

## 7 | CONCLUSIONS

This was the first study, demonstrating that gender role is a moderator for the positive correlation between learning needs and behavioural intention of sexual health care in the female nurse population. The results of this study may be used as an empirical reference for future school education and in-practice training on sexual health care, thereby helping nurses recognize their perception of learning need and behavioural intention of sexual health care and enhance their motivation in clinical practice.

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## CONFLICT OF INTEREST

All authors stated that there are no interests to declare.

## AUTHOR CONTRIBUTIONS

C.Y.H., S.H.L. and L.Y.T.: Critical revision of the manuscript, and guarantor of integrity of the entire study. All authors: Final approval of the manuscript, conception and design, acquisition of data, analysis and interpretation of data and drafting of the manuscript.

## ETHICAL APPROVAL

This study was reviewed and approved by the Institutional Review Board (IRB) of Chung-Shan Medical University Hospital, Taiwan. All the participants were volunteers and completed informed consent after explaining research purpose.

## DATA AVAILABILITY STATEMENT

The data sets for this study are available from the corresponding author on reasonable request.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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