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Gender dynamics in nursing profession: impact on professional practice and development in Tanzania

Racheal Mukoya Masibo^{1,2*}, Stephen M. Kibusi^{1*} and Golden M. Masika¹

Abstract

Background Gender disparity has long been noted in nursing, a predominantly female-dominated profession. However, recently the increase in the number of male nurses disproves the existing belief that nursing is exclusively a female profession. Even though the studies have reported changing gender trends in nursing, the information is not sufficient and the effects of the changing trend on professional practice and professional development have not been explored. Therefore this study aims to assess the influence of gender in nursing on professional practice and development in Tanzania.

Methods This was an analytical Hospital-Based Cross-sectional Study Design, conducted at four hospitals in Dar es Salaam, with 580 nurses between 20th May and 20th June 2024. Proportionate sampling was used to determine the required number of participants from each of the four facilities. Moreover, systematic random sampling was used to recruit participants from each facility. The validated questionnaire was used to obtain data, which were analyzed through descriptive and inferential statistics.

Results Among seventy items that measured professional practices, sixty three items indicated good professional practices among female nurses compared with their male counterparts male. On the association of gender in nursing to professional practice and development, the findings revealed no significant association between gender in nursing and professional practice ($\chi^2 = 1.384$; $P = 0.239$). Moreover, the item analysis revealed that male nurses have professional development in three items similar to female nurse who had shown professional development on other three items. Through binary logistic regression, male nurses were 0.528 (OR) times less likely to have good professional development than their female counterpart ($P < 0.001$; 95% CI: 0.379, 0.737). Several social demographic factors were found to be associated with professional practice and development.

Conclusion It was found that professional practice does not depend on gender in nursing, because the practice was optimal across both genders. Nurse's self-image of nursing, facility factors, and professional development influence their professional practice. Moreover, gender in nursing is associated with professional development, indicating the

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existence of gender stereotypes in the distribution of opportunities between male and female nurses. The study recommends extending this cross-sectional study to nonclinical settings such as training institutions.

Keywords Gender identity, Nursing, Professional practice, Professional development

Background

Gender disparity has long been noted in nursing, a predominantly female-dominated profession [1]. However, recently the increase in the number of male nurses disproves the existing belief that nursing is exclusively a female profession [2]. This finding is consistent with the statistics indicating the influx of men in nursing in several countries; in the United States nursing workforce, the number of men increased from 7% in 2006 to 9.6% in 2013 [3] to 12% in 2019 [4]. In Singapore, the number of male nurses has risen with time from 8.2% in 2008 to 11.6% in 2020 [1]. Moreover, the recent proportion of male nurses can be reflected in New Zealand (8%), the United Kingdom (10.8%), and Australia (11.75%) [4]. The changing trend can be reflected in education level attainment between 2010 and 2019 in Slovenia, the average share of female nurses holding a bachelor's degree ranged from 93.83% in 2010 to 88.66% in 2019 and from 6.17 to 11.34% for male nurses, respectively [5]. Even though gender diversity in nursing is hypothetically assumed to be associated with the acceleration of professional growth [6], a force for public policy change, and improving patient care through an opportunity to choose the gender of their preference [7], it is not given much consideration. Even though there is documentation about changing gender trends in nursing, previous studies have not captured the impact of changing gender diversity on the nursing professional practice and development. There is a limited reported actual benefit in clinical settings. This study aimed to assess the contribution of gender diversity in the clinical areas.

There is still uncertainty about the association of gender in nursing with professional practice, some studies have revealed that male nurses are just as effective as female nurses are, and that they bring a unique set of skills and qualities to the profession [8]. However, some other studies reports that male nurses are less capable of managing their emotions in clinical settings than female nurses are [9], men are considered insufficient in delivering care and are perceived as unsuitable in nursing [10], and lack the necessary skills, especially with respect to maternal health issues [11]. This information calls for a research confirming the current association of gender in nursing with professional practice. Regarding the influence of gender in the nursing workforce on professional development, 70% of male nurses have leadership opportunities compared with female nurses [12] and male nurses often pay special attention to their career development compared with their female nurses counterpart

[13]. There is a need to conduct a study using extensive indicators of professional development rather than relying on leadership.

In Tanzania, the disparity of gender in nursing was high in 2013, with female nurses accounting for 86% and male nurses accounting for 14% [14]. In 2015, the distribution of gender of nurses changed with female nurses accounting for 70% and male nurses accounting for 30% [15]. The increased gender diversity is perpetuated by the unemployment rate, job stability, career flexibility, growth of the nursing field, rising income, changes in nursing entry qualifications, and the presence of a variety of specialities in nursing [16, 17]. The changing gender trend in nursing has become prevalent in Tanzania, with more males entering the profession. The 2015–2022 statistics of student enrollment at the bachelor's degree level indicate that the proportion of enrolled student male nurses has risen from 23.6 to 50.5% during these seven years. The exponential increase in male nurses is detailed here; 2015 (540=Female nurse and 167=Male nurses), 2016 (565=Female nurses and 205=Male nurses), 2017 (501=Female nurses and 221=Male nurses), 2018 (508=Female nurses and 242=Male nurses), 2019 (410=Female nurses and 272=Male nurses), 2020 (362=Female nurses and 310=Male nurses), 2021 (311=Female nurses and 337=Male nurses), and 2022 (345=Female nurses and 352=Male nurses). Very few studies have been carried out in the area of changing gender trends in nursing focused on the identifying gender composition of different health cadres [14], gender stereotypes in nursing [18], and men's involvement in maternal healthcare [19]. Few studies have been conducted on the effects of gender in nursing on professional practice and professional development. Therefore this study aims to assess how gender in nursing influences professional practice and development in Tanzania. There are two specific objectives (i) to assess the influence of gender in the nursing workforce on professional practice and (ii) to determine the influence of gender in nursing on professional development. The conceptual framework is derived from two theories; Gibson performance theory and Social Cognitive Theory (SCT). Gender in nursing is associated with professional practice and professional development. Moreover, individual, psychological, and organizational factors are associated with professional practice and professional development. Moreover, professional development is associated with professional performance. Refer to Fig. 1.

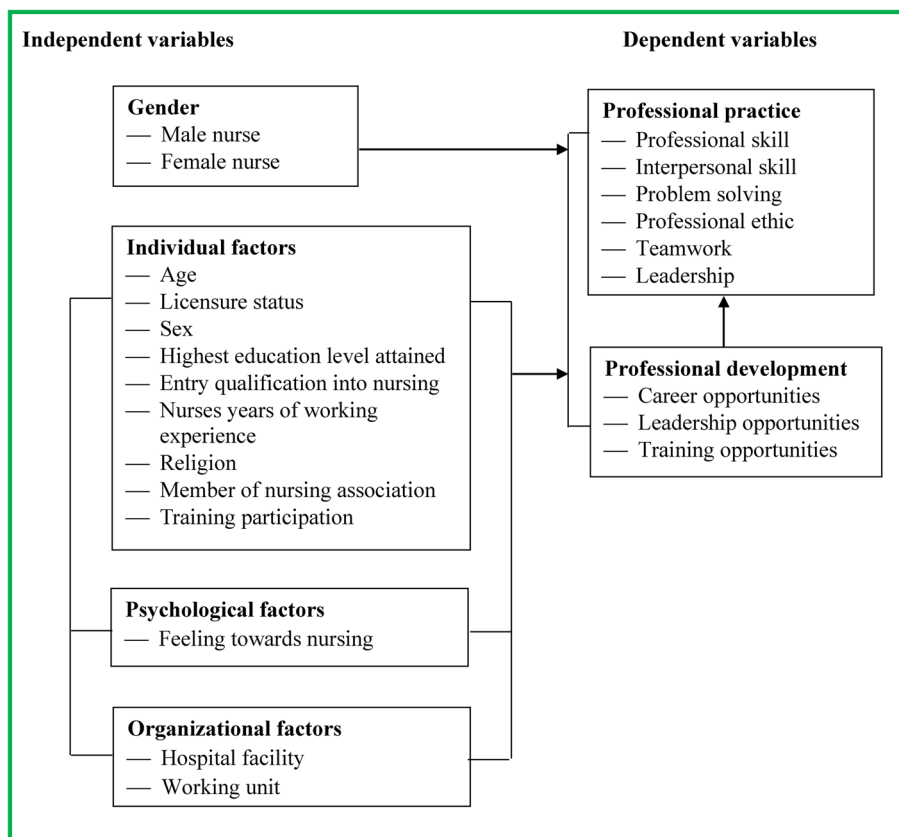


Fig. 1 Conceptual framework

Methods

Study design

This is the Analytical Hospital-Based Cross-sectional study design and adopted a quantitative approach to determine the association of gender in nursing and professional practice and development. The design was adopted because it helped establish the extent of association between independent (gender in nursing & sociodemographics) and dependent variables (professional practice and development). The study by Capili describe that an analytical cross-sectional study design provides the groundwork to infer preliminary evidence for a causal relationship [20]. It is also described as the design that helps to assess the association between an exposure and an outcome for causal inferences [21].

Study setting

The study was conducted in Dar es Salaam due to an increase in gender diversity in the workforce at several healthcare facilities in the city. In Tanzania, there is evidence of a link between the gender workforce and geographically placed facilities, where urban facilities are likely to have diverse genders, contrasting rural facilities with fewer female professionals. The four hospitals; Muhimbili National Hospital, Temeke Regional Referral

Hospital, Mwananyamala Regional Referral Hospital, and Amana Regional Referral Hospital were purposively selected, because of their high concentration of health-care providers of diverse genders.

Study population

The study population included nurses working in the clinical areas of four spotted hospitals; Muhimbili National Hospital, Temeke Regional Referral Hospital, Mwananyamala Regional Referral Hospital, and Amana Regional Referral Hospital.

Inclusion and exclusion criteria

Participants were recruited into the study if they were licenced as registered or enrolled nurses and working at hospital facilities. They were excluded if they were foreigners, were students in clinical rotations, and were intern nurses. Moreover, they were excluded if they were not willing to participate in the study.

Sample size determination and sampling procedure

The sample size was computed through G*Power version 3.1.9.4, with Test Family (X^2) and statistical test of Goodness-of-fit test [22]. With these parameters; effect size (0.3), α err prob (0.0001), Power $1-\beta$ err prob (0.99),

and Df [5], the sample size became 580 licenced nurses. Regarding the sampling procedure, a proportionate sampling approach was used to determine the required number of participants from each of four facilities. The four hospitals have a total of 1117 licenced nurses, distributed as follows; Muhimbili National Hospital (580 licenced nurses), Temeke Regional Referral Hospital (197 licenced nurses), Mwananyamala Regional Referral Hospital (160 licenced nurses), and Amana Regional Referral Hospital (181 licenced nurses). On proportionate sampling; 51.9% ($n=301$) of participants were recruited from Muhimbili National Hospital, 17.6% ($n=102$) were from Temeke Regional Referral Hospital, 14.3% ($n=83$) were from Mwananyamala Regional Referral Hospital, and 16.2% ($n=94$) were from Amana Regional Referral Hospital. Moreover, a systematic random sampling was used to recruit participants from each facility. A list of nurses from each facility was obtained and the k^{th} number was calculated $k=N/n$ to determine a regular interval for selecting samples [23].

Data collection procedure

The data were collected at Dar es Salaam between 20th May and 20th June 2024. A principal investigator and three research assistants were involved in the data collection. One-day training was conducted to help the research assistants become familiar with the standards of data collection. It is a self-administered questionnaire in which participants were visited at their respective working units, are asked to complete the written and verbal informed consent and on the same stance were provided with questionnaires to fill. Researchers were responsible for ensuring that sufficient instructions were delivered and that all required items in the questionnaires received a response from the participant. All the completed questionnaires were collected by the researchers.

Data collection tools

A principal investigator developed an English questionnaire version through the recommended steps; STEP 1: identification of the domain (s) and item generation; it was carried out on the basis of a preliminary qualitative study conducted by a principal investigator [24] and through a little literature review for conceptualization. The developed questionnaire was considered draft zero, with *one hundred thirteen items*; distributed as follows; sociodemographics (6 items), professional practice (83 items), professional development (20 items), and quality of care (4 items). STEP 2: Face validity; draft one was sent to 5 students pursuing a Master of Science in Nursing to respond on appropriateness, sensibility, and relevance of the dimension and items. Any confusion, observations, comments, and suggestions were considered for revising draft zero. The tool was revised and considered draft two,

with *one hundred items*; sociodemographics (6 items), professional practice (70 items), professional development (20 items), and quality of care (4 items).

STEP 3: Content validity; The amended questionnaire from STEP 2 was sent to 5 experts, along with a rating scale to critically examine the items and whether they measure constructs of sociodemographic characteristics, professional practice and professional development. The experts were asked to respond to the relevance of each item in the questionnaire. The rated scores from the experts were analyzed through the content validity index (CVI) and draft three was developed, with *ninety items*; sociodemographics (11 items), professional practice (70 items), and professional development (9 items). STEP 4: Tool pretesting survey; the draft two was pretested with 38 licenced nurses working at the healthcare setting. The internal consistency reliability of the tool indicates that, the entire tool with sociodemographics characteristics inclusive had Cronbach's Alpha of 0.76, while with exclusion of sociodemographic characteristics, the tool had Cronbach's Alpha of 0.92. Moreover, the professional practice had a Cronbach's Alpha of 0.93 and professional development had a Cronbach's Alpha 0.61. The reliabilities for most of the dimensions are within the acceptable Cronbach's Alpha of 0.7 and above, except for two dimensions, Contextual (0.440) and Professional development (0.607). Refer to Table 1.

STEP 5; Tests of dimensionality; Factor Analysis (FA) and Principle Component Analysis (PCA) of inter-item product-moment correlations (pmcs) and reliability were performed to assess the dimensionality of a test. Based on total variance and communalities, items were retained or discarded. The Rule of Thumb is that when Kaiser-Meyer-Olkin is 0.5 and above and significant, the PCA analysis was allowed to be performed. Additionally, items with Eigenvalue greater than 1, communalities of 0.5 and above, enable the decision to retain or discard the item. The draft three was amended by retaining all 70 items for measuring professional practice because all the items had communalities of 0.5 and above. Regarding professional development, on Total Variance Explained, only Items 1–3 have shown Eigenvalue greater than 1. Based on the Rule of Thumb only these three items should be retained. However, on Communalities, the first, fourth, fifth, and eighth had value less than 0.5. Therefore, the first item was retained because its Eigenvalue was good, but the fourth, fifth, and eighth items were removed from the tool because the values of Communalities were below the recommended 0.5 and above. Therefore, the final version of the tool has *eighty eight items* in three sections; sociodemographic characteristics (12 items), professional practices (70 items), and professional development (6 items). The English questionnaire version was translated into the Swahili native language version by a principal

Table 1 Reliability of the tool

Reliability	Cronbach's Alpha	N of Items
The whole tool including sociodemographic	0.76	90
The whole tool excluding sociodemographic	0.92	79
Professional practice	0.93	70
-Cronbach's Alpha for Contextual	0.44	11
-Cronbach's Alpha for Professional Skill	0.81	11
-Cronbach's Alpha for Clinical skill	0.79	8
-Cronbach's Alpha for Interpersonal Communication	0.85	11
-Cronbach's Alpha for Professional Ethics	0.90	9
-Cronbach's Alpha for Teamwork	0.87	7
-Cronbach's Alpha for Leadership	0.81	13
Professional Development	0.61	9

investigator and underwent face validity by a linguist fluent in Swahili and the English language. The translation involved backward and forward translation [25].

Definition of variables

For the independent variables; gender in nursing is defined as whether a nurse is male or female. Individual factors refer to the sociodemographic characteristics of the participants' nurses. Psychological factors refers to the feelings of study participants towards the nursing profession, whereas organizational factors involve the type and unit with which a study participant works.

The dependent variables are defined based on the basis of the dimensions forming them. For example, professional practice refers to how well or poorly nurse performs within the clinical setting. The following are the definitions of different dimensions that create professional practice; Contextual refers to nurses' features of consciousness of time management, being careful of hospital resource utilization, obeying rules, working in a systematic manner, and working under minimal supervision. Professional skills are the ability of nurses to be committed to nursing care, be empathy, deliver well-prepared or careful nursing services to the patients, and create a comfortable environment for patients. Clinical skills refer to the ability of nurses to perform nursing care procedures, such as assessment, patient information recording, resuscitation, physical examination, and interpretation of laboratory results. Interpersonal communication refers to the ability of nurses to demonstrate friendly, positive attitudes, empathy, and cooperation during interactions with patients and colleagues. Professional ethics involves nurses demonstrating honesty, integrity, maintaining privacy, observe patients rights, and respect. Teamwork refers nurses engaging with colleagues by respecting their opinions, participating in group activities, and making the group peaceful. Leadership skills are the ability of a nurse to lead others in the form of coaching, motivating, making decisions, using leadership styles, and evaluating the performance of other nurses. Professional

development refers to whether a nurse is growing in the field or remains stunted. Professional practice has dimensions that are defined as follows; Career opportunities refer to whether a nurse has furthered in his or her career in the past four years. Leadership opportunities are defined as whether a nurse has ever become a leader or has advanced to a managerial position. Moreover, training opportunities refer to whether a study participant has ever participated in any specialized training program.

Variable measurement

For the independent variable, gender was determined by one item, where the participants were required to indicate by selecting a male or female nurse. Moreover, detailed information on independent variables measurements for professional practice and development are provided here. For Professional practice was assessed using 70 items whereby any gender with a score equal to or above the mean was considered to have a good professional practice mean \pm SD (301.0586 \pm 29.63660), with minimum (min=105) and maximum (max=350)., otherwise, the score below the mean indicated poor professional practice. Professional development was assessed with 6 items and in the same way, was weighted based on mean score, whereby any gender with a score equal to or above the mean was considered to have a professional development mean \pm SD (8.1672 \pm 1.60137), with minimum (min=6) and maximum (max=12). Otherwise, a score below the mean indicated the absence of professional development.

Data analysis

The data were entered and analyzed with the Statistical Package for the Social Sciences (SPSS) version 26.0. Data coding, data cleaning, and normality testing were performed before data analysis. Moreover, the number of male and female nurses was first checked to ensure that they were the same to avoid violating the data analysis. Descriptive statistics such as frequency (n) and percentages (%) were used to compute respondents'

sociodemographic characteristics, whereas, means were used for continuous demographic variables. Additionally, descriptive statistics were applied to perform item analysis on professional practice and development. To compute professional practice, the items were summed and the average was computed. Any gender in nursing that scored above the mean score was considered good professional practice, and any gender that scored below the mean score was considered poor professional practice. In the same way for professional development, any gender score above the mean indicated professional development, but below the mean value, it was considered no professional development.

The Chi-squared test (χ^2), Binary and multivariate Logistic Regression were performed to generate Crude odds ratio (OR) and Adjusted Odds Ratio (AOR) to determine the extent of the associations between gender in nursing and professional development, between sociodemographic characteristics and professional practice and development, and between professional development and practice. The Adjusted Odds Ratio (AOR) assessed the strength of associations when multiple variables with significant odds ratio were simultaneously computed [26]. The significance level was set at $P < 0.05$.

Ethics approval and consent to participate

The study ethical clearance letter was obtained from the University of Dodoma Institution Research Review Committee (IRREC), with reference number: MA 84/261/02. The permission to conduct the study in four hospitals was obtained from the Regional Administrative Secretary (RAS). Written and verbal informed consent was completed by each participant before participated in the study. None of the participants were under 16 years of age, therefore no guardian completed the informed consent on behalf of the participants. The participants had the freedom to participate voluntarily and withdraw from the study at any time they felt so.

Results

Participants' sociodemographic characteristics

Neither the participants refused to take part in the study nor the participants dropped out of the study, are resulting in the generation of data from all 580 participants included in the analysis. The dataset used for data analysis is provided as Additional file 1. The study participants were from Muhimbili National Hospital 301 (51.9%), Temeke Regional Referral Hospital 102 (17.6%), Amana Regional Referral Hospital 94 (16.2%), and Mwananyama Regional Referral Hospital 83 (14.3%). The average age (Mean \pm SD) was 34.92 \pm 7.81 (Min-Max) 20-58 years and most of the participants 469 (80.9%) were adults aged 26-44 years old. About professional registration, participants were licenced as registered nurses 474 (81.7%) and

enrolled nurses 106 (18.3%). Regarding sex, male nurses were 290 (50%) and female nurses 290 (50%). The participants had education levels of diploma and below level 392 (67.6%), Bachelor's degree 164 (28.3%), and post-graduate level 24 (4.1%). The entry qualifications for the first time joining a nursing program among the study participants were an ordinary educational level of 384 (66.2%), a high school educational level of 181 (31.2%), and a primary educational level of 15 (2.6%). About their experience, they had worked on average (Mean \pm SD) 8.079 \pm 6.3335 years. During the study, many of the participants were working in maternal and gynaecology units 168 (29%), medical department 158 (27.2%), and surgical department 99 (17.1%). The participants belonged to Christianity 403 (69.5%) and Muslim 177 (30.5%). They were proud to be nurses 480 (82.8%), were active members of the Tanzania National Nurses Association (TANNA) 400 (69%), and had participated in health-related training within six months 298 (51.4%). Refer to Table 1. Meanwhile, on looking the characteristics of the study participants by gender, eight of the 11 variables were significantly different between male and female nurses; educational level ($P < 0.001$), belonging to a nursing association ($P < 0.001$), working experience ($P < 0.001$), age ($P = 0.015$), entry qualification into nursing ($P < 0.001$), working in a hospital facility ($P < 0.001$), licensure status ($P = 0.005$), and feelings toward nursing ($P < 0.001$). However, three characteristics were not significantly different between male and female nurses; religion ($P = 0.928$), working unit ($P = 0.481$), and having participated in training ($P = 0.319$). Refer to Table 2.

Professional practices among nurses of both genders

Professional practice involves contextual, professional skills, clinical skills, interpersonal communication, professional ethics, teamwork, and leadership. The current study found that 334 (57.6%) had good professional practices whereas 246 (42.4%) had poor professional practices in clinical settings.

Item analysis of nurses' professional practices based by gender

Among the seventy items that measured professional practices, sixty three items indicated good professional practices among female nurses compared with their male counterparts. Female nurses reported that they are economical with facility finances and resources 269 (46.4%), do not often complain about organizational conditions 260 (44.8%), don't have a habit of absenteeism 282 (48.6%), frequently participate in hospital meetings 260 (44.8%), are always neat and clean in appearance 281 (48.4%), always accept responsibilities from supervisors 285 (49.1%), work hard to complete the assigned tasks 285 (49.1%), and work in a systematic manner 282

Table 2 Participants sociodemographic characteristics (n=580)

Variables	Frequency (n)	Proportion (%)
Age (Mean \pm SD) 34.92 \pm 7.81 (Min- Max) 20–58		
45–59	73	12.6
26–44	469	80.9
18–25	38	6.6
Hospital facility		
Muhimbili National Hospital	301	51.9
Temeke Regional Referral Hospital	102	17.6
Amana Regional Referral Hospital	94	16.2
Mwananyamala Regional Referral Hospital	83	14.3
Licensure status		
Registered nurses	474	81.7
Enrolled nurses	106	18.3
Sex		
Male nurse	290	50.0
Female nurse	290	50.0
Highest education level attained		
Postgraduate	24	4.1
Bachelor level	164	28.3
Diploma and below level	392	67.6
Entry qualification for the first time joining nursing program		
Advanced level	181	31.2
Ordinary level	384	66.2
Primary level	15	2.6
Nurses years of working experience (Mean \pm SD) 8.079 \pm 6.3335 (Min-Max) 0.2–32		
6 and above years	333	57.4
1–5 years	232	40.0
< 1 year	15	2.6
Working unit		
Medical unit	158	27.2
Surgical unit	99	17.1
ICU	37	6.4
Pediatric unit	11	1.9
EMD	16	2.8
OPD unit	2	0.3
Administration unit	3	0.5
Psychiatry unit	23	4.0
Maternal and Gynecology units	168	29.0
TB and Leprosy unit	1	0.2
Central sterile supply unit	1	0.2
Theatre	2	0.3
CTC	4	0.7
Private unit	55	9.5
Religion		
Christian	403	69.5
Muslim	177	30.5
Feeling towards nursing		
Proud to be a nurse	480	82.8
Not proud to be a nurse	100	17.2
Belong to nursing association (TANNA)		
Yes	400	69.0
No	180	31.0
Participated in any health-related training within six months		
Yes	298	51.4
No	282	48.6

(48.6%). Moreover, female nurses obey hospital rules 283 (48.8%), always time conscious 283 (48.8%), empathize with patients' emotions and concerns 287 (49.5%), always committed to patient care 287 (49.5%), follow clinical rules, guidelines, procedures and hospital policies 286 (49.3%), deliver well-prepared or careful nursing services to patients 285 (49.1%), and manage nursing activities in time 285 (49.1%). Female nurses create a comfortable environment for patients 280 (48.3%), able to provide quality care to patients even when I am feeling irritated or frustrated 262 (45.2%), create a supportive environment for patients under my care 284 (48.9%), make an effort to provide quality care to my patients 285 (49.1%), always document patient care by regulatory standards and guidelines 287 (49.5%), effectively plan patient care based on individual needs and established protocols 284 (48.9%), consistently monitor patients' condition constantly and record their situation 283 (48.8%), and feel competent in carrying out my nursing duties effectively and safely 286 (49.3%). Furthermore, female nurses reported that they conduct history-taking according to established standards and protocols 284 (48.9%), perform physical examinations as per standard 282 (48.6%), carry out procedures in a manner that aligns with best practices and guidelines 285 (49.1%), and feel confident in my ability to perform successful resuscitation procedures when necessary 277 (47.8%). Additionally, female nurses cooperate with supervisor nurses 285 (49.1%), always behave in a friendly manner 269 (46.4%), have good communication skills when interacting with patients 287 (49.5%), effectively communicate with colleagues professionally and collaboratively 288 (49.7%), always provide detailed information to patients regarding their health condition and treatment options 286 (49.3%), consistently maintain a positive attitude in my interactions with patients 284 (48.9%), and consistently maintain a positive attitude in my interactions with colleagues 287 (49.5%). Moreover, female nurses exercise openness during clinical practice 283 (48.8%), demonstrate empathy toward patients 286 (49.3%), always support patients 285 (49.1%), always exercise equality and fairness in my clinical practices 286 (49.3%), always maintain a positive attitude toward patients and their families during interactions 281 (48.4%), always maintain confidentiality by safeguarding sensitive information in accordance with professional standards and regulations 287 (49.5%), always maintain patients' privacy 286 (49.3%), always provide information to patients and their families regarding their health condition, treatment options, and care plans 269 (46.4%), and always ensure equity in the care provided to all patients 287 (49.5%). Similarly, female nurses observe and respect the rights of patients 288 (49.7%), respect patients 288 (49.7%), always communicate with honesty and integrity when interacting with patients 285 (49.1%), always obtain

consent from patients before performing any procedures or treatments 283 (48.8%), cooperate with the members of other teams 287 (49.5%), participate in meetings 278 (47.9%), give feedback to colleagues in a constructive way 281 (48.4%), communicate well with other team members 284 (48.9%), and respect the contribution from the team 279 (48.1%). Furthermore, female nurses were found to address problems to keep the team at peace 279 (48.1%), trust team members 280 (48.3%), motivate other nurses 281 (48.4%), coach others in duties 280 (48.3%), possess supervisor attributes 258 (44.5%), use a democratic leadership style when I have to lead others 255 (43.9%), solve speedy clinical problems 241 (41.6%), take initiative to solve a work problem 244 (42.1%), evaluate nurses' performances 236 (40.7%), communicate well with nurses they are leading 269 (46.4%), and role model for nurses they are leading 268 (46.2%). In contrast, the majority of female nurses in two items indicated that they did not use the autocratic style 217 (37.4%) or the laissez-faire leadership style 197 (33.9%) when leading others. However, in only five items, males show good professional performance compared to female nurses. Male nurses reported working under minimal supervision 236 (40.7%), not giving care in hastily way 253 (43.6%), feeling competent in interpreting patient laboratory results 252 (43.4%), participating in decision-making 228 (39.3%), and participate in budget preparation 208 (35.9%). The 70 items for assessing professional practice were categorized into seven dimensions, and the descriptive results for each dimension were computed through (Mean \pm Std. Deviation) along with Minimum- Maximum. The following are values identified; Contextual 47.5276 \pm 5.59678 (11-55), Professional skills 48.0655 \pm 5.65922 (11-55), Clinical skills 35.0259 \pm 4.17382 (8-40), and Interpersonal Communication 48.7034 \pm 5.49281 (12-55). Moreover, the others were Professional Ethic 40.1017 \pm 4.38221 (12-45), Teamwork 31.0190 \pm 3.67477 (7-35), and Leadership 50.6155 \pm 8.62170 (13-65). Refer to Table 3.

Association of gender with nursing in professional practice

Through a Pearson Chi-Squared test (χ^2), it revealed no significant association of gender in nursing with professional practice ($\chi^2= 1.384$; $P=0.239$). Refer to Table 3. Binary logistic regression was not performed to determine the extent of the association between gender in nursing and professional practice because the Chi-Squared test was not significant.

The association of participants sociodemographic characteristics on professional practice

Through a Pearson Chi-Squared test (χ^2), the following sociodemographic variables were significantly associated with professional practice Hospital facilities ($\chi^2=9.777$; $P=0.021$). The highest education level attained ($\chi^2=6.863$;

Table 3 Dimension analysis for professional practice (n=580)

Dimension	Mean ± Std. Deviation	Minimum-Maximum
Contextual	47.5276 ± 5.59678	11–55
Professional skills	48.0655 ± 5.65922	11–55
Clinical skills	35.0259 ± 4.17382	8–40
Interpersonal Communication	48.7034 ± 5.49281	12–55
Professional Ethic	40.1017 ± 4.38221	12–45
Teamwork	31.0190 ± 3.67477	7–35
Leadership	50.6155 ± 8.62170	13–65

$P=0.032$), feelings toward nursing ($\chi^2=10.526$; $P=0.001$), belonging to the nursing association (TANNA) ($\chi^2=6.150$; $P=0.013$), and participation in any health-related training within six months ($\chi^2=19.684$; $P<0.001$). The remaining sociodemographic factors such as age, licensure status entry qualification for the first time joining the nursing program, working unit, years of working experience, and religion, were not significantly associated with professional practices. Refer to Table 4.

The extent of the association of participants' sociodemographics with professional practice

Binary and Multivariate Logistic Regressions were performed to determine the extent to which sociodemographic factors were associated with professional practice. Regarding the hospital facility, nurses working at Temeke Regional Referral Hospital were 0.432 (AOR) times less likely to have good professional practice than nurses from Mwananyamala Regional Referral Hospital ($P=0.006$; 95% CI: 0.273, 0.786). Moreover, nurses who were proud of their profession were 1.736 (AOR) times more likely to have good professional practices than nurses who are not proud of their profession ($P=0.031$; 95% CI: 1.053, 2.863). Nurses with a postgraduate level of education were 3.472 (AOR) times more likely to have good professional practice than their counterpart nurses with diplomas and lower levels of education ($P=0.031$; 95% CI: 1.122, 10.74). Moreover, nurses who had participated in any health-related training within six months were 1.772 (AOR) times more likely to have good professional practices than those who did not participate ($P=0.004$; 95% CI: 1.205, 2.605). Refer to Table 5.

Influence of professional development on professional practices

Through a Pearson Chi-Squared test (χ^2), professional development was significantly associated with professional practice ($\chi^2=36.156$; $P<0.001$).

The extent of the association of professional development with professional practice

Binary Logistic Regression was performed to determine the extent to which professional development was associated with professional practice. Nurses who had poor

professional development were 0.347 (OR) times less likely to have good professional practice ($P<0.001$; 95% CI: 0.245, 0.492).

Professional development

Professional development involves identifying of how much nurses thrive in career development, training participation, and being leaders. For both gender, 329 (56.7%) had poor professional development, whereas 251 (43.3%) had good professional development.

Item analysis of professional development based on gender in nursing

Compared with female nurses, male nurses have shown professional development in three items; advanced their career in the past four years 98 (16.9%), owned or coauthored any project 75 (12.9%), and don't see bias in role distribution among gender in nursing 85 (14.7%). However, compared with male nurses, female nurses have shown their professional development in the other three items; have attained specialized programs 159 (27.4%), have been able to advance to any managerial position 160 (27.6%), and have ever become a leader in your working place 155 (26.7%). Refer to Table 6.

Association of gender in nursing in the professional development

A Pearson Chi-Squared test (χ^2), revealed a significant association between gender in nursing and professional development ($\chi^2=14.223$; $P<0.001$). Binary logistic regression was performed to determine the extent to which gender in nursing was associated with professional development. Compared with female counterparts, male nurses were 0.528 (OR) times less likely to have good professional development ($P<0.001$; 95% CI: 0.379, 0.737).

Association of participants' sociodemographic characteristics with professional development

The Pearson Chi-Squared test (χ^2) was used to compute the association of gender in nursing with professional development. The following sociodemographic variables were significantly associated with professional development; age ($\chi^2=61.768$; $P=0.007$), hospital facility ($\chi^2=15.878$; $P=0.001$), licensure status ($\chi^2=13.387$; $P<0.001$),

Table 4 The association of participant's sociodemographic characteristics on professional practice

Variable	Good professional practice n (%)	Poor professional practice n (%)	χ^2	P-value
Age (Mean±SD) 34.92 ± 7.81 (Min - Max) 20-58				
45-59	42 (12.6)	31 (12.6)	0.521	0.771
26-44	268 (80.2)	201 (81.7)		
18-25	24 (7.2)	14 (5.7)		
Hospital facility				
Muhimbili National Hospital	173 (51.8)	128 (52)	9.777	0.021
Temeke Regional Referral Hospital	48 (14.4)	54 (22)		
Amana Regional Referral Hospital	48 (14.4)	35 (14.2)		
Mwananyamala Regional Referral Hospital	65 (19.5)	29 (11.8)		
Licensure status				
Registered nurses	277 (82.9)	197 (80.1)	0.772	0.38
Enrolled nurses	57 (17.1)	49 (19.9)		
Highest education level attained				
Postgraduate	20 (6)	4 (1.6)	6.863	0.032
Bachelor level	94 (28.1)	70 (28.5)		
Diploma and below level	220 (65.9)	172 (69.9)		
Entry qualification for the first time joining nursing program				
Advanced level	106 (31.7)	75 (30.5)	0.155	0.925
Ordinary level	219 (65.6)	165 (67.1)		
Primary level	9 (2.7)	6 (2.4)		
Nurses' years of working experience (Mean±SD) 8.079±6.3335 (Min-Max) 0.2-32				
6 and above years	198 (59.3)	135 (54.9)	2.004	0.367
1-5 years	126 (37.7)	106 (43.1)		
<1 year	10 (3)	5 (2)		
Working unit				
Medical unit	86 (25.7)	72 (29.3)	13.056	0.443
Surgical unit	60 (18)	39 (15.9)		
ICU	22 (6.6)	15 (6.1)		
Pediatric unit	5 (1.5)	6 (2.4)		
EMD	8 (2.4)	8 (3.3)		
OPD unit	0 (0)	2 (0.8)		
Administration unit	1 (0.3)	2 (0.8)		
Psychiatry unit	16 (4.8)	7 (2.8)		
Maternal and Gynecology units	92 (27.5)	76 (30.9)		
TB and Leprosy unit	1 (0.3)	0 (0)		
Central sterile supply unit	1 (0.3)	0 (0)		
Theatre	1 (0.3)	1 (0.4)		
CTC	2 (0.6)	2 (0.8)		
Private unit	39 (11.7)	16 (6.5)		
Religion				
Christian	233 (69.8)	170 (69.1)	0.029	0.866
Muslim	101 (30.2)	76 (30.9)		
Feeling towards nursing				
Proud to be a nurse	291 (87.1)	189 (76.8)	10.526	0.001
Not proud to be a nurse	43 (12.9)	57 (23.2)		
Belong to nursing association (TANNA)				
Yes	244 (73.1)	156 (63.4)	6.15	0.013
No	90 (26.9)	90 (36.6)		
Participated in any health-related training within six months				
Yes	198 (59.3)	100 (40.7)	19.684	<0.001
No	136 (40.7)	146 (59.3)		

Table 5 The extent of association of participant's sociodemographic on professional practice

Variable	OR	P-value	95% CI		AOR	P-value	95% CI	
			Low	Upp			Low	Upp
Hospital facility								
Muhimbili National Hospital	0.603	0.045	0.368	0.988	0.671	0.125	0.403	1.117
Temeke Regional Referral Hospital	0.397	0.002	0.221	0.712	0.432	0.006	0.273	0.786
Amana Regional Referral Hospital	0.612	0.119	0.33	1.135	0.658	0.197	0.349	1.242
Mwananyamala Regional Referral Hospital	.	.	.	.	.	.	.	.
Feeling towards nursing								
Proud to be a nurse	2.041	0.001	1.319	3.157	1.736	0.031	1.053	2.863
Not proud to be a nurse	.	.	.	.	.	.	.	.
Highest educational level								
Postgraduate	3.909	0.014	1.312	11.649	3.472	0.031	1.122	10.74
Bachelor level	1.050	0.796	0.727	1.517	0.995	0.979	0.676	1.465
Diploma and below	.	.	.	.	.	.	.	.
Belong to nursing association (TANNA)								
Yes	0.639	0.013	0.448	0.911	0.963	0.861	0.628	1.476
No	.	.	.	.	.	.	.	.
Participated in any health-related training within six months								
Yes	2.126	<0.001	1.52	2.972	1.772	0.004	1.205	2.605
No	.	.	.	.	.	.	.	.

Table 6 Item analysis of professional development based on gender in nursing

Variables	Male nurses n (%)	Female nurses n (%)
Have you advanced your career in the past four years?		
Yes	98 (16.9)	91 (15.7)
No	192 (33.1)	199 (34.3)
Have you attained any specialized program?		
Yes	130 (22.4)	159 (27.4)
No	160 (27.6)	131 (22.6)
Have you been able to advance to any managerial position?		
Yes	100 (17.2)	160 (27.6)
No	190 (32.8)	130 (22.4)
Do you own or co-authored any project?		
Yes	75 (12.9)	74 (12.8)
No	215 (37.1)	216 (37.2)
Have you ever become a leader in your workplace?		
Yes	86 (14.8)	155 (26.7)
No	204 (35.2)	135 (23.3)
There is no bias in role distribution among gender in nursing		
Yes	85 (14.7)	44 (7.6)
No	205 (35.3)	246 (42.4)

highest education level attained ($\chi^2= 16.411$; $P<0.001$), nurses years of working experience ($\chi^2= 29.574$; $P<0.001$), working unit ($\chi^2=10.032$; $P=0.002$), feeling towards nursing ($\chi^2= 10.032$; $P=0.002$), belonging to a nursing association (TANNA) ($\chi^2= 44.674$; $P<0.001$), and participated in any health-related training within six months ($\chi^2= 34.516$; $P<0.001$). Only religion was not significantly different ($\chi^2= 1.119$; $P=0.572$). Refer to Table 7.

The extent of the association of participants' sociodemographics with professional development

Binary and Multivariate Logistic Regressions were performed to determine the extent to which sociodemographic factors were associated with professional development. Nurses working at Amana Regional Referral Hospital were 2.319 (AOR) times more likely to develop than nurses from Mwananyamala Regional Referral Hospital ($P=0.014$; 95% CI: 1.183, 4.544). Regarding licensure status, registered nurses were 2.39 (AOR) times more likely to have professional development than

Table 7 The association of participants' sociodemographic characteristics on professional development

Variable	Good professional development n (%)	Poor professional development n (%)	χ^2	P-value		
Age (Mean \pm SD) 34.92 \pm 7.81 (Min-Max) 20–58						
45–59	37 (14.7)	36 (10.9)	2.35	0.309		
26–44	200 (79.7)	269 (81.8)				
18–25	14 (5.6)	24 (7.3)				
Hospital facility						
Muhimbili National Hospital	129 (51.4)	172 (52.3)	15.878	0.001		
Temeke Regional Referral Hospital	34 (13.5)	68 (20.7)				
Amana Regional Referral Hospital	37 (14.7)	57 (17.3)				
Mwananyamala Regional Referral Hospital	51 (20.3)	32 (9.7)				
Licensure status						
Registered nurses	222 (88.4)	252 (76.6)	13.387	< 0.001		
Enrolled nurses	29 (11.6)	77 (23.4)				
Highest education level attained						
Postgraduate	20 (8)	4 (1.2)	16.411	< 0.001		
Bachelor level	67 (26.7)	97 (29.5)				
Diploma and below level	164 (65.3)	228 (69.3)				
Entry qualification for the first time joining nursing program						
Advanced level	88 (35.1)	93 (28.3)	5.82	0.054		
Ordinary level	160 (63.7)	224 (68.1)				
Primary level	3 (1.2)	12 (3.6)				
Nurses' years of working experience (Mean \pm SD) 8.079 \pm 6.3335 (Min-Max) 0.2–32						
6 and above years	174 (69.3)	159 (48.3)	29.574	< 0.001		
1–5 years	76 (30.3)	156 (47.4)				
< 1 year	1 (0.4)	14 (4.3)				
Working unit						
Medical unit	63 (25.1)	95 (28.9)	13.626	0.401		
Surgical unit	54 (21.5)	45 (13.7)				
ICU	15 (6)	22 (6.7)				
Pediatric unit	3 (1.2)	8 (2.4)				
EMD	6 (2.4)	10 (3)				
OPD unit	2 (0.8)	0 (0)				
Administration unit	1 (0.4)	2 (0.6)				
Psychiatry unit	10 (4)	13 (4)				
Maternal and Gynecology units	69 (27.5)	99 (30.1)				
TB and Leprosy unit	1 (0.4)	0 (0)				
Central sterile supply unit	1 (0.4)	0 (0)				
Theatre	1 (0.4)	1 (0.3)				
CTC	1 (0.4)	3 (0.9)				
Private unit	24 (9.6)	31 (9.4)				
Religion						
Christian	171 (68.1)	232 (70.5)			0.383	0.536
Muslim	80 (31.9)	97 (29.5)				
Feeling towards nursing						
Proud to be a nurse	222 (88.4)	258 (78.4)	10.032	0.002		
Not proud to be a nurse	29 (11.6)	71 (21.6)				
Belong to Nursing Association (TANNA)						
Yes	210 (83.7)	190 (57.8)	44.674	< 0.001		
No	41 (16.3)	139 (42.2)				
Participated in any health-related training within six months						
Yes	164 (65.3)	134 (40.7)	34.516	< 0.001		
No	87 (34.7)	195 (59.3)				

consistent with previous findings that working facilities play an important role in promoting professional practice especially when the work environment enhances nurses' satisfaction [33]. Another study reported several other factors that are likely associated with nurses' optimal performance, such as workload, remuneration, rewards, objectives to be achieved, and feedback on performance appraisals [34]. Therefore, non-gender factors seem to influence professional practice, which calls for hospital management, guideline developers, and policy makers to improve the performance of their nurses by targeting nongender factors. Moreover, nurses who are proud of their profession have better professional practice than do nurses who are not proud of their profession because a positive attitude and positive perception are theoretically linked to good performance and commitment. This finding is supported by a previous study reporting that nurses with positive self-images toward nursing have better professional performance than their counterparts with negative self-images [35]. Another study revealed that nurses with negative self-esteem in nursing face a reduction in empathy, efficacy, and poor performance [36].

The association of gender in nursing on professional development

The current study revealed that gender is associated with professional development. Compared with male nurses, female nurses were found to have high professional development in term of career development, training participation, and leadership. This might be because female nurses have been in the profession for long a period of time, allowing them to understand how to lobby, snatch, or grasp opportunities. This finding is consistent with previous study reporting that women play an important role in lobbying by preventing men from receiving opportunities [37]. Regarding advancing in managerial positions, female nurses have often been receiving management positions because their history indicates that women have been leading the nursing profession effectively for a long period of time and that their capabilities have been obvious and trusted. Moreover, the campaign of "if you help a woman she can do it" has precipitated women to climb the ladder in management and leadership. The campaign ensures that women are the priority when there are management vacancies or opportunities. These findings are consistent with previous study reporting that managerial positions at most institutions are held by female nurses [38]. Regarding career development, women were found to have greater opportunities to advance their career than males did. This might be influenced by the availability of women's scholarships making women easily advance their careers in nursing. Additionally, the 50-50 ratio of student

enrollment has been a strategy for ensuring that women attain their desired educational levels.

Association of nurses' sociodemographic with professional development

Licensure status, facility, age, and working experience seem to influence the professional development of nurses. For example, compared with enrolled nurses, registered nurses found to have professional development because the enormous number of available opportunities targets registered nurses. The opportunities of advanced practice nursing currently require registered nurses and not enrolled nurses. Regarding healthcare facilities, some facilities are more vibrant facilitating the professional development of their nurses than other facilities are, such as training opportunities, building different departments to allow nurses to become leaders of those departments, and allocating budgets for staff to advance their careers. About nurses' age, those with 34 years and older were found to have professional development, possibly because at this age a person knows what he/she wants out of life. When they have professional development they may receive further opportunities and earn good income. Regarding working experience, nurses who have worked for many years have good professional development. This may be because nurses who have long exposure in the clinical setting understand the pros and cons of professional development, which is why they often decide to have professional development. This finding conforms with previous findings that age and working facilities assist nurses constantly improving their level of education, occupational independence, and scientific activity, including research and publications [39].

Study implications and limitations

Regarding study implication, this study extends the limited research on the understanding of trends in the gender of nurses in Tanzania and the impact of gender in nursing on professional practice and professional development. Few studies have considered the link between gender in nursing and practice and development. Therefore, the study contributes to the empirical literature. This study contributes to theories, showing how the interaction of the constructs of Gibson's performance theory and Social Cognitive Theory (SCT) are effective indicators for measuring professional practice and development in the clinical settings. The interaction of the two theories, paves the way for developing a new theory to accommodate whole constructs. The study has contributed to the development of a new tool effective for measuring professional practice and development. The domains and items can be adopted to extend the nature

of the study. This study informs policy and guideline developers to consider male and female nurses 50/50 in terms of offering opportunities, employing, and educational enrollment of students.

About study limitations, the study was confined to one region of Tanzania out of 27 regions, which limits the generalizability of the findings. Only public hospitals were included, thus the findings lack an extensive picture of private hospitals. Moreover, considering only participants from urban areas and only working in referral/tertiary hospitals limits the study because the working environment and type of facility whether primary care facilities might have an impact on professional practice and development among gendered nurses. The majority of the participants were from maternal and gynecology units, medical units, or surgical units. The lack of 1:1 ratio of participants from different units might have affected the findings, because the practice, type of roles and role distribution differ from one unit to another. Moreover, male nurses and female nurses differed in most of the characteristics (sociodemographics), that might have influenced what the results look like. This study is limited in that professional development was assessed subjectively instead of objectively. Additionally, the study did not apply a complex statistical model to compute the extent of association between the dependent and independent variables.

Conclusion

Professional practice does not depend on gender in nursing, because across both genders, the practice is optimal. However, nurses' self-image of nursing, facility factors, and professional development influence their professional practice. Moreover, gender in nursing, licensure status, facility, age, and working experiences are associated with professional development. Therefore, there is a gender stereotype in the distribution of opportunities between male and female nurses. In recommendation, since there is no difference in the professional practices of both male and female nurses, the existing strategies for promoting an influx of male nurses should be intensified and new strategies should be initiated. The gender stereotype in nursing, especially the maldistribution of opportunities should be mitigated to improve morale and excellent performance. Future intervention studies are recommended to test the effectiveness of different approaches in addressing the imbalance in the distribution of opportunities among male and female nurses. Future research in the same areas is recommended to be carried out in private institutions, because the resources, guidelines, social recognition, and opportunities differs from those of public institutions.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

RMM: Conceptualization, Writing a draft of the research, Reviewing the research, Analysis, and Data collection. SMK: Conceptualization, Supervision, and Project administration. GMM: Conceptualization, Supervision, Data visualization and Project administration.

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Availability of data and materials

Data is provided on supplementary information files.

Declarations

Ethics approval and consent to participate

The study ethical clearance letter was obtained from the University of Dodoma Institution Research Review Committee (IRREC), with reference number: MA 84/261/02. The permission to conduct the study in four hospitals was obtained from the Regional Administrative Secretary (RAS). Written and verbal informed consent was completed by each participant before participating in the study. None of the participants were under 16 years of age, therefore no guardian completed the informed consent on behalf of the participants. The participants had the freedom to participate voluntarily and withdraw from the study at any time they felt so.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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