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South African nursing students' awareness and knowledge of the occupational therapy profession

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Background: Interprofessional education is a growing field of knowledge that promotes collaborative competencies among healthcare professionals within a South African context. Occupational therapists and nurses work together to enhance patient care. However, little is known about nursing students' awareness of occupational therapy.

Aim: The study assessed the level of awareness and general knowledge of nursing students regarding the occupational therapy profession as part of interprofessional collaborative practice.

Methods: A quantitative, descriptive cross-sectional survey design was conducted using a paper-based self-administered questionnaire with nursing students recruited from the Western Cape, Gauteng, and Mpumalanga provinces. The Statistical Package Social Sciences was used for quantitative analysis and content analysis was used for the qualitative comments.

Results: A response rate of 90.60% (n=299) was achieved. Of the respondents, 87.5% (n=262) were aware of occupational therapy, while more than half 57.5% (n=172) indicated that they know an occupational therapist. The findings showed that interprofessional education provided the respondents with opportunities to learn and collaborate with other students. Two-thirds of the respondents, 66.9% (n=200) indicated that they never engaged in an interprofessional module during their training.

Conclusion: Nursing students who had been exposed to interprofessional education had substantial general knowledge that occupational therapists collaborate with other professionals to improve the quality of life using activities as part of the interventions.

Keywords: interprofessional education, nursing students, occupational therapy, interprofessional competencies, interprofessional collaborative practice, quality of care

INTRODUCTION

Central to the entire discipline of health is the concept of Interprofessional Education (IPE), which promotes a high quality of care services. IPE is "when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes"^{1,7}. IPE is a growing field in health sciences and it holds the potential to ameliorate many inequalities and resource-scarce problems that are experienced in South Africa². Historically, occupational therapists and nurses work together

in many sectors within a South African context; however, their "educations have delivered in an isolated educational environment"^{3,2}. The isolated educational environment has been identified as one barrier that restricts exposure to IPE competencies related to collaborative learning, teamwork, and patient care. Research in healthcare only focuses on qualified professional nurses' level understanding of occupational therapy in the workplace, but little is known about the nursing students^{4,5,6,8}. There is a need for understanding how IPE exposes nursing students to other health profes-

sions, such as occupational therapy. IPE has been perceived as an enabler that promotes communication and understanding, creates mutual respect, and shared values^{9,10}. This is further important for a positive prognosis of the clients and high-quality care through appropriate referrals, and proper preparation for discharge,^{9,10,11}

Occupational therapy is a client-centred health profession concerned with promoting quality of life, health, and wellbeing, through enabling people's engagement in meaningful occupation^{12,13}. In occupational therapy, occupations involve "the everyday activities that people do as individuals, in families and with communities to occupy time and bring meaning and purpose to life"¹². Therefore, it is pertinent that occupational therapists should collaborate with the "multiple health workers from different professional backgrounds that work together with patients, families, carers, and communities to deliver the highest quality of care"¹⁷. Occupational therapists collaborate with physicians, nurses, physiotherapists, social workers, audiologists, and speech therapists as part of the Interprofessional Collaborative Practice (ICP)^{4,5,6,7}. Lack of awareness and knowledge about occupational therapy among other healthcare professionals, have been identified as barriers that influence the working culture of communication, team spirit, and decision making^{4,5,6,7}. The barriers among healthcare professionals perpetuate harmful stereotypes that influence patient-centred ethical practice, continuum of care, referral system and provision of quality services in health care^{7,8}. Ledwaba et al.⁵ reported that nurses appeared not to have insight into the role of occupational therapy in a South African context. Therefore, the need for promoting an understanding of occupational therapy among the members of the IPE teams has been reported in different countries, including Jordan⁸, and Nigeria⁶. This suggests that nurses need to collaborate with occupational therapists as part of the IPE teams in their workplace so that they can improve patients' health outcomes.

The framework of action of Interprofessional Education and Collaborative Practice (IPECP) guides health policymakers, educators, and workforce leadership with strategies to implement core competencies within IPE teams¹⁴. This resonates with Gilbert et al.¹⁵ who accentuated that the IPE teams have a role to play in effective health services. The IPE teams further collaborate to support the Sustainable Developmental Goals in particular goal³: "ensure healthy lives and promote wellbeing for all" can be achieved with collaborative-partnerships^{16,18}. It has been indicated that a strong collaborative practice-ready health worker appears to be someone who has learnt to work in an IPE team and is competent to work with others^{15,17}. Therefore, the IPE teams need to change the working culture and attitude of health workers about other professions and instil a willingness to update existing curricula¹⁵. These mechanisms might assist occupational therapists and nurses in promoting better quality healthcare services where good referral systems, professional relationships, and collaboration are fundamentals of the interprofessional teams. Addressing the complexities within the IPE teams could provide evidence to guide interventions, policies and

decision making in all levels of education and the National Health Insurance (NHI). Despite the importance of IPECP, it has been reported that there is much less information and evidence about how universities, colleges, and health professionals established IPECP². A qualitative study by Tedesco and colleagues¹⁸ explored the perceptions of professional nurses on group intervention by occupational therapists with patients having mental health conditions who were admitted to a university hospital in Brazil. Their findings¹⁸ indicated that nurses regarded occupational therapists as essential team members who add value to the care of patients with mental illness. In contrast to Tedesco et al.¹⁸ it is now well established that a lack of communication between occupational therapists and nurses influences their interprofessional relationship and IPECP^{2,19}. This could be linked to poor academic preparation and "limited interaction between students and overlapping of curriculum between courses"^{2,295} that did not introduce the nurses to the role of occupational therapy in the interprofessional team. However, the influence of poor relationships might have negative implications for the clients who need quality healthcare services from the IPE teams^{5,6,7,8,9}.

Therefore, it is believed that nurses and nursing students who are aware of and knowledgeable about occupational therapy services could promote the clients' health, quality of life and wellbeing at all levels of healthcare^{5,8}. The evidence provided an opportunity to advance knowledge of how nursing students perceive occupational therapy. It is envisaged that the study will offer some important insights into how occupational therapists may plan and develop an educational programme to bridge the gap of knowledge of nurses and nursing students about the role of occupational therapy. This study aimed to assess the level of awareness and knowledge of nursing students regarding the occupational therapy profession as part of the interprofessional team.

METHODS

Study design

A quantitative, descriptive cross-sectional survey^{20,21} was conducted with nursing students from three provinces (i.e., Gauteng, Mpumalanga, and Western Cape) in South Africa.

Ethical considerations

Ethical approval was sought from the BioMedical Research Ethics Committee (BMREC) from the University of the Western Cape (BM18/8/4) and the Research Ethics Committee from the Mpumalanga Department of Health in Mpumalanga Province (MP_201810_010). Permission to conduct the study was received from the University of the Western Cape, University of the Witwatersrand, and Mpumalanga College of Nursing. Respondents were informed about the purpose of the study, and they consented to be part of the study. Respondents' right to anonymity, confidentiality, and privacy was observed, and numbers were used to de-identify their personal details, as stated in the Protection of Personal Information (POPI) Act of 2013²². Permission to use the self-

administered questionnaire was obtained from, from the author, Prof Hashem Tariah, on 27 July 2015.

Study population and sampling

The population comprised registered nursing students from training institutions in the three provinces. In Western Cape and Gauteng provinces, fourth-year students registered for BCur degrees at the universities were considered. In Mpumalanga province, students registered for Diploma in General Nursing and were eligible for the study. A sample size was calculated using a Raosoft sample size calculator²³. A margin error of 5% was used with 95% confidence levels for a population of approximately 2328 nursing students registered in three provinces. A convenience sampling method²⁴ was used to select the 330 respondents, which demonstrated that the expected sample included 50% representative of the institutions. The heads of the departments and lecturers from the three provinces served as gatekeepers who provided access to the nursing students eligible for the research study. Face-to-face interaction was used as a recruitment strategy to inform the respondents about the purpose of the study. Of the 330 respondents recruited for the study, a 90.60% (n=299) response rate was computed for those who completed the questionnaire.

Research instrument for data collection

A paper-based, self-administered questionnaire was used to conduct the survey about the level of awareness and knowledge of nursing students regarding occupational therapy⁸. Data were collected between March to September 2019. It took about 40 minutes to complete the survey. The first section consisted of demographic information, such as age, sex, marital status, and level of education. The second section of the paper-based self-administered questionnaire comprised five subscales, namely *awareness of occupational therapy* (three items), *general knowledge about occupational therapy* (10 items), *knowledge about the areas of occupational therapy practice* (six items), *knowledge about goals of occupational therapy practice* (23 items), and *knowledge about occupational therapy methods and media* (26 items). A five-point Likert scale (1 being strongly disagree and 5 being strongly agree) was employed to measure the nursing students' knowledge about occupational therapy. The questions were asked in both the negative and positive (i.e., the occupational therapist use purposeful activities to treat service recipients, the occupational therapist works only with children). For positive items, a score between 3-4 was regarded as adequate knowledge, and over 4 was considered as excellent knowledge. However, for negative items, any score of 3 or above indicated poor knowledge, whereas 2 and less than was regarded as good knowledge. Additionally, in the questionnaire, a space for open-ended comments was included to provide respondents with opportunities to express their opinions. For internal consistency reliability of the scales: the general knowledge about occupational therapy had the value for Cronbach's Alpha of $\alpha=0.75$, the knowledge about the areas of occupational therapy practice with a Cronbach's Alpha of $\alpha=0.70$, and the knowledge

about goals of occupational therapy practice ($\alpha=0.79$), and knowledge about occupational therapy methods and media with a Cronbach's Alpha of $\alpha=0.75$ ⁸.

Measurement validity is the extent to which the construct in the research question is successfully operationalised^{25,26}. The instrument needs to provide goodness of fit and be used to measure the construct. Content validity of the measurement instrument was achieved by using an existing questionnaire developed by Tariah et al.⁸. The instrument provides relevant items about the knowledge of the occupational therapy profession and is a valid measure of the knowledge of other healthcare professionals. The highest score of 5 indicated a strong agreement, while a score of 1 shows a strong disagreement. The measurement instrument was adopted with the belief that the instrument would provide similar results for repeatability²⁶. The authors therefore ensured that the internal consistency of the instrument was valid for the assessment of how the items in the scale relate to each other for the South African sample²⁶. Results indicated an acceptable Cronbach's alpha of 0.88 in the current study.

Data analysis

Statistical Package Social Sciences (SPSS) software²⁶²⁷ was employed by the first author to compute the descriptive statistics frequencies, percentages, means and standard deviations. Internal consistency of the occupational therapy knowledge scale was calculated using Cronbach's alpha coefficient. A Pearson's Chi square test, one-way analysis of variance (ANOVA) with Kruskal-Wallis (H) test were used to compare the data gathered from the different institutions. Open-ended comments were analysed by the first and second authors using quantitative content analysis to determine the presence of certain themes and were quantified based on the need for awareness and exposure to IPE²⁸. Data screening was conducted to check for the missing data by reviewing the questionnaires and data set. There were missing observations due to non-response for the items such as 'heard of occupational therapy' (0.3%, n=1), 'use of occupational therapy service' (0.3%, n=1), 'know an occupational therapist' (8.4%, n=25), and 'exposure to IPE module' (8.7%, n=26). The amount of missing data per item was less than 15%, which is acceptable²⁹.

RESULTS

Demographics of the respondents

Of the 299 respondents who participated in the study, the majority 78.8% (n=235), were females. The mean age of the respondents was 25.77±7.36 years, with a range of 19 to 55 years, as presented in Table I (page 48).

Awareness and sources of knowledge about occupational therapy

In relation to the awareness about occupational therapy, the majority 87.5% (n=262) of the respondents indicated that they once heard about occupational therapy (Table II, page 48). It was evident from the respondents' comments that career

Table I: Socio-demographic characteristics of the respondents (n=299)

Characteristic	Students' Profile	Frequency	Percentage
Gender	Female	235	78.6%
	Male	64	21.4%
Age	19-29	255	85.3%
	30-42	25	8.4%
	43-55	19	6.5%
Race	African	252	84.3%
	Coloured	33	11.0%
	White	9	3.0%
	Indian	4	1.3%
Marital status	Single	272	91.0%
	Married	25	8.4%
	Separated	2	0.7%
Province	Gauteng	43	14.4%
	Western Cape	95	31.8%
	Mpumalanga	161	53.8%

guidance is one of the marketing tools to inform others about occupational therapy. One respondent shared that

“I heard about occupational therapy when I was attending career guidance programmes” (Respondent 95).

There was a significant difference between the three provinces where respondents were situated, and the number of respondents who had heard of occupational therapy. The Kruskal-Wallis (H) test showed $X^2(2) = 23.93$, $p = 0.00$, with a mean rank score of 169.49 for Gauteng, 161.71 for Western Cape and 136.98 for Mpumalanga.

It was noted that 82.9% (n=248) of the respondents indicated they never used occupational therapy services. Statistical significance was observed between the three provinces where students were situated and their use of occupational therapy services, as the Kruskal-Wallis (H) test showed $X^2(2) = 6.84$, $p = 0.00$, with a mean rank score of 156.28 for Mpumalanga, 143.37 for Western Cape and 134.13 for Gauteng.

More than half of the 57.5% (n=172) respondents indicated that they knew an occupational therapist. A significant difference between the three provinces where students are situated and the number of them knowing occupational therapy, as Kruskal-Wallis (H) test, showed $X^2(2) = 8.41$, $p = 0.01$, with a mean rank score of 168.00 for Gauteng, 140.28 for Mpumalanga and 124.39 for Western Cape.

Inter-professional education

Two-thirds of the respondents 66.9% (n=200), indicated that they never had an opportunity to engage in an interprofessional module that allowed students from different disciplines to learn and work together. There was a significant difference between the provinces where the students were situated and their experiences of an IPE module. This is evident in the Kruskal-Wallis (H) test $X^2(2) = 78.94$, $p = 0.00$, with a mean rank score of 202.00 for Gauteng, 168.00 for Western Cape and 110.20 for Mpumalanga. From

Table II: Awareness of occupational therapy

Items	Response	Frequency	Percentage
Heard of occupational therapy	No	36	12.0%
	Yes	262	87.5%
	Missing	1	0.3%
Used occupational therapy services	No	248	82.9%
	Yes	50	16.7%
	Missing	1	0.3%
Know an occupational therapist	No	102	34.1%
	Yes	172	57.5%
	Missing	25	8.4%
Experience of IPE module	No	200	66.9%
	Yes	73	24.4%
	Missing	26	8.7%

the qualitative comments, it was clear that 61.9% (n=13) of respondents from two of the provinces (Western Cape and Gauteng) had exposure to the IPE module.

“We were all put into different groups that consisted of OT, Nursing, Medical, Physio and Dentistry students” (Respondent 17).

“It was a small class on management of diabetic patients with doctors, occupational therapists, nurses, and pharmacists. Also, a trauma/ disaster event IPE”. (Respondent 20)

One-third of the respondents 38% (n=8) felt that IPE facilitates teamwork, patient care, interprofessional socialisation, and problem-solving skills.

“In first year, I had a module primary health care where I was in a group with other students in different health care professions. It helped me to understand other professions”. (Respondent 24)

“This module required us to meet and engage with other students studying different courses in the same faculty. This benefited us because the students met and formed the multidisciplinary team, and it was nice to get to know them”. (Respondent 70)

It was evident from the comments that case studies were used as a learning and teaching strategy that enabled the respondents to collaborate and enhance their collective efforts to address the needs of the patients, as part of the multidisciplinary team in the real world.

“We were given a case study and had to work together to solve the patient’s problem”. (Respondent 17)

“IPE Module was about engaging with students from other departments (Social Work, Physio, Natural Medicine, Dietetics) and working together as one (Such as in MDT)”. (Respondent 07)

“Multidisciplinary team functioning for future purposes in

Table III: General knowledge about occupational therapy

Items	Mean	Standard deviation	Kruskal-Wallis (H)	P-value
The occupational therapist works with people with special needs	4.14	0.88	9.72	0.00
Occupational therapy is another term for physical therapy	3.26	1.18	22.45	0.00
The occupational therapist uses activities as a treatment method	4.13	0.81	19.83	0.00
The occupational therapist and the physical therapist work collaboratively to improve the client's quality of life	4.21	0.74	0.69	0.70
The occupational therapist's work is limited to providing recommendations and consultations for clients [†]	3.16	1.15	13.15	0.00
Occupational therapy is a branch of physical therapy [†]	3.53	0.9	11.02	0.00
Anyone can become an occupational therapist after receiving training courses [†]	3.53	1.14	10.50	0.00
To practice occupational therapy the person needs to get a Bachelor's degree in the profession	3.95	0.91	41.79	0.00
There is no need for academic preparation. The person becomes a certified occupational therapist only by practising occupational therapy under supervision [†]	2.00	1.02	4.48	0.10
The occupational therapist works only with children [†]	1.58	0.83	5.08	0.07

[†], negative items

the medical field benefited me as a nursing student to be able to function as a group in patient-centred activities". (Respondent 44)

"It included working in groups with the MDT, what they do and trying to find a care plan inclusive of disciplines to help patients recover to optimum health". (Respondent 34)

"It was in a ward where nurses, a doctor and dietician were discussing patient care". (Respondent 12)

General knowledge about occupational therapy

An overall mean score of 3.35 ($SD = 2.65$) indicates that the respondents had a general knowledge of occupational therapy. The subscale of the general knowledge about occupational therapy had an internal consistency reliability coefficient of $\alpha=0.55$. Three of the negative items achieved a score of 3 or more, which indicated that the respondents had poor knowledge about occupational therapy work. Statistically significant differences were noted between the students from different provinces and scores of general information about occupational therapy. In contrast, the other two negative items scored between 2 and below, which signified that the respondents were knowledgeable about academic preparation and where occupational therapists work, as illustrated in Table III, above

Few of the respondents agreed that occupational therapy is another term for physical therapy ($M = 3.26$; $SD= 1.18$) and that it is a branch of physical therapy ($M = 3.53$; $SD= 0.93$). This corroborated with one respondent who commented,

"Mostly I just think that OT, and Physio are the same thing." (Respondent 14)

Three of the respondents commented they had limited knowledge about the roles and duties of occupational

therapy. Subsequent comments illustrated the comments.

"My knowledge and information about the profession is very limited. My opinions are more or less a prediction/guess". (Respondent 008)

"I heard about occupational therapy; I even see members of occupational therapy, but I do not know exactly their duty". (Respondent 055)

"The information about OT that I have is not enough. If by any chance there are means to be in-service about OT duties, I will appreciate it". (Respondent 059)

Three respondents stated that:

"They would like to learn more about occupational therapy." One respondent suggested that "I think they should teach students in the health institutions about other health professions so that they understand other professions on how they work to improve people's lives." (Respondent 064)

Knowledge about areas of occupational therapy practice

An average mean score of 3.76 for knowledge about areas of occupational therapy practice was computed, and the subscale scored a commendable internal consistency reliability of $\alpha=0.76$. There were significant differences between the nursing students from different provinces and their scores on areas of occupational therapy practice as the Kruskal-Wallis (H) tests in Table IV⁹, (page 50) clearly show.

Goals of occupational therapy practice

Overall, a mean score of 3.62 was computed in relation to the subscale of knowledge about the goals of occupational therapy. The mean values ranged from a minimum of 2.00

Table IV: Areas of occupational therapy practice

Items	Mean	Standard deviation	Kruskal-Wallis (H)	P-value
The occupational therapist works in community-based rehabilitation centres	3.72	1.01	36.55	0.00
The occupational therapist works in hospitals	4.31	0.64	9.11	0.00
The occupational therapist works in schools	3.51	1.04	54.07	0.00
The occupational therapist works in mental health facilities	3.89	0.98	86.12	0.00
The occupational therapist works in factories	3.49	1.08	12.12	0.00
The occupational therapist works in universities	3.71	1.01	11.23	0.00

and a maximum of 4.24. The Cronbach’s alpha of 0.79 indicated an acceptable internal consistency for reliability. From respondents’ comments, it was evident that they have seen the importance of occupational therapy:

“I have experienced most clients who were admitted in the hospital, CVA patient who is unable to care for him/herself after attending the session. They get improved, able to use the hands to bathe and to eat”. (Respondent 51)

In addition, quality of life is another goal of occupational therapy that the students agreed was important (M = 4.23; SD = 0.72). One respondent concurred that:

“Occupational Therapy plays an important role in people’s lives”. (Respondent 64)

There were statistically significant differences between the provinces where the students are situated and the scores of goals of occupational therapy practice. Seven negative items were identified in relation to the goals of occupational therapy practice. It has been noted that two of the negative items achieved a score of 3 and above, which indicated that the respondents had poor knowledge of the goals of occupational therapy in practice. However, five of the negative items scored 2 and below, which signified that the respondents had good knowledge about goals of occupational therapy practice related to areas of occupations (Table V, page 51).

Occupational therapy methods and media

Overall, a mean score of 3.54 was computed regarding the methods and media used in occupational therapy practice. The subscale has been found to be reliable because an acceptable internal consistency of $\alpha=0.79$ was obtained. This could be related to the comment shared by one respondent who said,

“I feel like the occupational therapist sometimes like to feel they can do everything the doctor does because sometimes even if a client needs to be seen by the doctor, they do not refer, they just give medication only and tell you to leave”. (Respondent 001)

Statistically significant differences were identified between the respondents from provinces and the scores of OT methods and media. Ten negative items regarding knowledge about occupational therapy treatment methods and media were identified. Five of the ten negative items achieved a score of 3 and above, which is poor knowledge that occupational therapist use exercises, limitations to rehabilitation, extremities, and doctor’s recommendation. However, the other five negative items scored between 2.20 and 2.78. These scores indicated that the respondents had a good level of knowledge about treatment methods and media, as depicted in Table VI (page 52).

Impression about occupational therapy

The overall mean score of 3.09 was calculated regarding the general impression of occupational therapy. The mean values were found between a minimum of 2.05 and a maximum of 4.12 in Table VII (page 53). However, one of the negative items achieved a score of 2, which is regarded as a good impression of occupational therapy. A Kruskal-Wallis H test showed that there was a statistical difference in participants’ impression of occupational therapy services scores between the institutions, $X^2(2) = 14.59, p= 0.00$, with a mean rank score of 151.82 for Mpumalanga, 119.65 for Western Cape and 107.43 for Gauteng.

DISCUSSION AND IMPLICATIONS

Lack of awareness about occupational therapy as part of the IPE teams could result in the omission of the profession in the NHI’s discussion of the basic healthcare for all people of South Africa Primary Health Care services and NHI^{30,31}. This study illustrates a substantial level of awareness among the respondents regarding occupational therapy. The findings of the statistical differences between the groups revealed that the Gauteng nursing students had better knowledge compared to the Western Cape and Mpumalanga ones. Additionally, the results of this study were found to be consistent with similar past research that demonstrated that healthcare professionals have heard about occupational therapy^{6,8,32}. A possible explanation for the high level of awareness of occupational therapy could be related to the respondents obtaining information about occupational therapy from friends, colleagues, career guidance and personal contact with an occupational therapist⁶. However, the findings of the present study indicated 12% (n=36) of the respondents had not heard anything about occupational therapy compared to 20% from the previous study⁸. The possible rationales behind this result could be linked to a lack of visibility and academic preparation that did not introduce the nursing students to the roles and responsibilities of occupational therapy^{8,33}. This is in contrast with the findings that revealed

Table V: Knowledge about goals of occupational therapy practice

Items	Mean	Standard deviation	Kruskal-Wallis	P-value
Helping the clients with walking [†]	3.67	1.06	11.11	0.00
Helping the clients with using his hands	3.97	0.95	14.18	0.00
Helping the clients develop their cognitive skills	4.07	0.81	23.32	0.00
Helping to integrate the clients in the community	3.94	0.83	41.39	0.00
Helping the clients perform activities of daily living independently	4.26	0.74	37.01	0.00
Improving the social interaction of the clients	3.93	0.80	16.38	0.00
Helping the clients to become productive	4.20	0.69	23.48	0.00
Helping the clients to practice their role in the community at an optimal level of functioning	4.11	0.78	36.71	0.00
Helping the clients perform their daily routines efficiently	4.28	0.69	24.51	0.00
Helping the clients to perform all of their activities in a supportive environment	4.16	0.81	36.94	0.00
Helping the clients to improve their quality of life	4.23	0.72	27.81	0.00
Helping the clients to safely and independently perform indoor and outdoor functional mobility	4.13	0.81	8.75	0.01
Helping the clients to perform purposeful activities	4.14	0.70	19.14	0.00
Helping the clients to find appropriate employment [†]	3.34	1.16	65.34	0.00
The occupational therapist is not concerned with leisure activities of the clients [†]	2.25	1.02	12.04	0.00
The occupational therapist is not concerned with the school functioning of the clients [†]	2.12	1.02	14.85	0.00
The occupational therapist is not concerned with the vocational performance of the clients [†]	2.17	1.01	11.16	0.00
The occupational therapist is concerned with the child's engagement in play [†]	2.00	0.97	12.55	0.00
The work of the occupational therapist is limited to training the clients for performing activities of daily living [†]	2.77	1.14	2.55	0.27
The occupational therapist works within a medical team	4.19	0.90	0.40	0.81
The occupational therapist works within an academic team	3.78	1.03	13.29	0.00
The occupational therapist works within a multi-specialty team based on the clients' needs	4.16	0.83	5.71	0.05
The occupational therapist role includes integrating children with special needs in the mainstream schools	3.83	0.91	15.61	0.00

† negative items

high statistical differences among the nursing students from Mpumalanga compared to the Western Cape and Gauteng, who once used occupational therapy services. Therefore, the findings of the current study suggest that occupational therapy-marketing tools should be strengthened during career guidance, open days, and occupational therapy week to enhance the visibility of the profession.

Lack of occupational therapy knowledge can influence patient care and recognition of the profession as part of the debates in Primary Health Care level^{30,34}. However, the findings demonstrated that the respondents from the Gauteng and Western Cape provinces had interprofessional modules, and they appeared to have better knowledge about occupational therapy compared to the province where students never had exposure to IPE. Therefore, the findings of the present study coincide with the results of the previous studies that found that IPE encourages nursing students to collaborate, communicate and form teamwork with other disciplines while in training to prepare for the real world^{79,35}. It can further be shown from the results that nursing students seemed to have benefited from the IPE exposure, as they have learnt to work with others. This result is consistent with the findings of the other studies, which found that students believed that working with other health care professionals would play an important

role in their future career^{79,35}. However, the findings from the current survey revealed that the Mpumalanga nursing students who never had IPE exposure were still able to relate the ward rounds to the interprofessional discussion about patient care. These findings are corroborated by the several instances whereby the nursing students expressed their interest in general knowledge of occupational therapy and that more educational opportunities should be available to raise awareness. Additionally, the findings echoed the previous studies that accentuated the importance of educational opportunities related to IPE, interprofessional collaborative practice and collaborative management of patients^{6,7,30}. The findings of the present study were resonant with the Kirkpatrick framework that focuses on the perception, knowledge, skills, attitudes, and behavioural changes^{36,37,38}. This was evident in the comments related to Kirkpatrick level 2 skills as the nursing students gained confidence in teamwork, problem-solving during exposure to IPE and clinical work.

The present study demonstrated that nursing students had a general knowledge about occupational therapy. However, it was noted that there were misconceptions that need to be corrected. This result is significant because nursing students are part of the future workforce, and they will have an influence in the referral of clients

Table VI: Knowledge about occupational therapy treatment methods and media

Items	Mean	Standard deviation	Kruskal-Wallis (H)	P-value
The occupational therapist uses exercises to treat clients [†]	3.98	0.88	8.01	0.22
The occupational therapist uses purposeful activities to treat clients	4.15	0.70	4.11	0.12
The occupational therapist implements needed modifications on clients' environments	3.97	0.76	3.17	0.20
The occupational therapist instructs clients on modified methods to perform their daily activities	4.03	0.78	7.45	0.02
The occupational therapist provides psychological consultations	3.44	1.08	18.19	0.00
The occupational therapist may treat clients in groups	3.84	0.96	36.64	0.00
The occupational therapist uses play as an intervention method for children	4.07	0.81	30.68	0.00
The occupational therapist concerns about the engagement and the interest of clients in the selected activity	3.94	0.82	38.86	0.00
The occupational therapist chooses the activities based on clients' diagnosis	4.23	0.71	10.59	0.00
The clients participate in formulating the treatment goals	4.07	0.79	17.21	0.00
The occupational therapist focuses only on the medical conditions [†]	2.55	1.24	15.71	0.00
The role of the occupational therapist includes performing the needed modification on the clients' environment	3.83	0.87	18.40	0.00
The occupational therapist's work is limited to rehabilitating the clients to return to his former profession [†]	3.20	1.13	10.27	0.00
The occupational therapist prescribes medications for clients [†]	2.54	1.24	15.39	0.00
The occupational therapist uses herbs in the treatment of clients [†]	2.20	1.15	11.88	0.00
The occupational therapist recommends indoor and outdoor modifications	3.80	0.95	38.47	0.00
The occupational therapist prescribes and modifies assistive devices that clients use to perform at an optimal level of functioning	3.83	0.98	0.99	0.68
The occupational therapist formulates the intervention plan without collaboration with clients or his family [†]	2.78	2.16	12.62	0.00
The occupational therapist formulates the intervention plan without collaboration with the clients or his teachers [†]	2.50	1.17	4.20	0.12
The occupational therapist formulates the intervention plan without collaboration with clients or others in the medical team [†]	2.40	1.23	12.89	0.00
The occupational therapist works with clients to improve the function of the upper extremities, and the physical therapist works to improve the function of the lower extremities [†]	3.32	1.14	4.80	0.09
The occupational therapist prescribes medications based on the doctor's recommendation [†]	3.10	1.17	17.45	0.00
The occupational therapist develops a home programme when needed	4.05	0.75	18.88	0.00
The occupational therapist consults clients' families on the appropriate interaction with clients	3.96	0.83	15.61	0.00
The occupational therapist uses available resources to help clients perform at the highest level of functioning	4.21	0.67	4.76	0.09
The occupational therapist collaborates with teachers in the mainstream schools to develop strategies to help children with special needs perform at the highest level of functioning	4.08	0.81	4.66	0.09

[†] negative items

to occupational therapy. This finding suggests possible areas that occupational therapists, occupational therapy educators and students should consider as part of raising awareness of the profession through available platforms. These findings have important implications for developing occupational therapy students' projects such as brochures, posters, videos, Facebook, and other social media that may be dedicated to marketing the profession. These strategies can be performed as advocacy efforts whereby occupational therapy students may collaborate

with other professions in IPE modules. These strategies will enable advocacy about occupational therapy in a South African context, which coincides with the previous studies conducted from other countries, such as Jordan, Saudi Arabia, and Nigeria and their need to learn and know about occupational therapy^{8,33}. Advocacy efforts are consistent with the promotion of the knowledge of the profession of occupational therapy and professional confidence while integrating occupational therapy services in the Primary Health Care reengineering streams and IPE teams^{30,39}.

Table VII: General impression of occupational therapy

Items	Mean	Standard deviation	Kruskal-Wallis (H)	P-value
Occupational therapy services have no effect on patients' quality of life	2.05	1.16	14.59	0.00
I am convinced about the importance of occupational therapy to patients and their families	4.12	0.87	1.17	0.55
I think I have enough information about OT and the services they provide	3.11	1.26	1.27	0.52

† negative items

The descriptive survey study by Jamnadas et al.³³ sought to discover whether nursing, physician's assistant students at a large Midwestern university got a sufficient overview in their professional curriculums about the role of occupational therapy and its implication in health services. It was found that the students had a very narrow scope, consisting mainly of activities of daily living (ADLs). Contrary, our findings indicated that the nursing students seemed to be aware that occupational therapy comprises a variety of goals related to hand function, cognitive skills, community integration, activities of daily living, social interaction, routines, environment, quality of life, medical team, and academic team. Additionally, the findings in the current study revealed that a substantial number of nursing students did not concur with the negative statements about occupational therapy goals related to leisure, school functioning, vocational performance, child's engagement in play and limitation to training clients on activities of daily living. Like the previous studies^{9,33} these findings suggest that more effort should be geared towards the promotion of occupational therapy to other health professionals, such as nurses and physicians so that they may enhance their referral system of clients who need occupational therapy services at an earlier stage.

In occupational therapy, advocacy is considered as one competency that is used to enable the clients', groups' and communities' engagement in occupations or meaningful activities, which is the substantial contribution that can be promoted on interprofessional teams⁴⁰. Advocacy is a "client-centred strategy involving a variety of actions taken by the client and therapist, directed to the client's environment to enact change for the client such that engagement in occupation is enhanced through meeting basic human rights or improving quality of life"^{40:246}. Therefore, the findings of our research endorse existing studies that accentuated the continuous awareness of the role of occupational therapy in promoting occupation-based practice at the IPECP level^{40,41}. The findings further revealed that the nursing students agreed that the occupational therapist chooses the activities based on the clients' diagnosis and uses available resources to help clients perform at an optimal level of functioning as part of occupational therapy methods and media. In strengthening the role of occupational therapy in IPE teams, occupational therapists and students need to employ diverse frameworks, such as the International Classification of Function (ICF), community-based rehabilitation (CBR), and social model³⁰. This could enable occupational therapists to provide evidence through outcome measures related to functional outcomes that promote quality of life

and wellbeing.

The findings of the present study offer some insight into the nursing students' knowledge about the areas, intervention methods and media that are part of the occupational therapy profession. Therefore, the findings further demonstrate that the nursing students seemed to be convinced about the significant role of occupational therapy to patients and their families. This is crucial for occupational therapists so that they may "develop and project confidence in order for our profession to optimally meet our clients' needs and further the public good."^{42:268} The role clarification and alignment of occupational therapy in IPECP programmes related to school health, mental health, HIV, TB, and provision of assistive devices could enable occupational therapists to meet the needs of the clients³⁰. This could strengthen the collaborative work in promoting access to better healthcare with improved standards of public health facilities, which is anticipated in NHI³¹.

Limitations of the study

Our study represents data from a once-off descriptive cross-sectional survey restricted to nursing students from three provinces; therefore, the findings cannot be generalised to other nursing students. Additionally, using a paper-based self-administered questionnaire could be a limitation because of time pressure on respondents, and nonresponse, as a result, the findings need to be interpreted cautiously.

CONCLUSION

The study provides evidence about the level of awareness regarding occupational therapy among nursing students from three South African provinces. Nursing students who had exposure to IPE through engagement learning and clinical work as part of the real world, were knowledgeable about the importance of meaningful occupations in occupational therapy. IPE teams should be used to promote collaborative work that strengthens occupational therapy services through interprofessional communication, client-centred advocacy, and appropriate referral systems. This could assist in advocacy efforts for raising awareness among other professionals through IPE and reduce the misconceptions, and the poor knowledge identified in other studies. Therefore, the promotion of occupational therapy among other professionals will enhance interprofessional socialisation and strengthen advocacy for engagement in meaningful occupations. The findings highlighted a need for IPE pragmatic evidence about the contribution of occupational therapy in interprofessional teams. Further research could

focus on a pre-post study exposing IPE teams to the role of occupational therapy in a workshop that promote occupational therapy.

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DATA AVAILABILITY STATEMENT

Data that support the findings of this study are available from the corresponding author who was the principal investigator [Thuli Mthembu], upon reasonable request.

DECLARATION OF CONFLICTING INTEREST, BIAS, AND FUNDING

The authors declare that there is no conflict, financial, belief, and personal interests that could affect their objectivity.

AUTHOR CONTRIBUTIONS

Thuli G. Mthembu conceptualised the research, wrote the proposal, did the ethics application and data collection, and drafted the manuscript. Nokuthula G. Nkosi-Mafutha reviewed the proposal, participated in data collection, and reviewed the manuscript. Julia T. Maunye took part in data collection and reviewed the manuscript.

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