

Perception of Pharmacy Teachers About Their Roles and Current Practice at Governmental Universities in Sudan

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Background: Pharmacy educator has a number of roles and responsibilities, an information provider, clinical trainer, role model on-the-job, formal teaching settings, course planner and resource material creator, student assessor, and curriculum evaluator.

Objective: This study aimed to assess the perception and commitment of pharmacy teachers in Sudanese governmental universities about their roles and educational responsibilities.

Materials and Methods: Descriptive cross-sectional study was conducted at governmental pharmacy colleges in Sudan from November 2020 to July 2021. Data were collected using an online self-administered questionnaire adapted from the Association for Medical Education in Europe (AMEE) Guide No. 20. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 26 and Microsoft Excel version 16.

Results: Out of 125 participants, 61.6% were female and 65.6% were lecturers. Approximately half of them had less than five years' experience. The most important role perceived and the highest committed one was a lecturer in the classroom setting. Only half of the participants had good perceptions and commitment regarding teachers' roles. Age, designation, and continuous professional development were significantly associated with participants' commitment. Also, a significant association was found between the perception and practice of the participants.

Conclusion: Only half of pharmacy educators were found to have a good perception and good commitment regarding their role as teachers.

Keywords: pharmacy educator, teacher role, perception, commitment, Sudan

Introduction

Education can be defined as the process of teaching and learning whereby knowledge is conveyed effectively.¹ Pharmacy education is rapidly evolving, and a great shift occurred from traditional to more innovative teaching; it is transformed to a more student-centered, problem-based, and systematic approach.^{2,3} As a consequence of this paradigm shift in educational strategies and teaching methods, educators need to be updated to meet their new roles.⁴ Teaching is a complicated task, particularly in pharmacy schools because of the great expansion in pharmacy education from drug-oriented to more patient-oriented, requiring graduates with additional competencies to meet patients' perceptions and needs.^{5,6} Furthermore, the high enrollments of students in the pharmacy programs in developing countries, which similar increases have not been matched in resources, presents many concerns, including the availability of enough trained academic faculty members and the quality of teaching.^{7,8}

In some universities in Pakistan, pharmacy education is a five-year professional degree centered on a multidisciplinary curriculum, and graduates receive a Doctor of Pharmacy degree (Pharm-D). As well as theoretical

sessions, students undergo practical experiments and demonstrations. Pharmacy students are also required to visit companies, hospitals, retail pharmacies, and clinics in order to get real-world experience and deepen their knowledge, as directed by the respective regulatory body.⁹ The same description applied in Sudan except that the students graduated with a Bachelor's degree instead of a Pharm-D degree despite the same length of study.

The roles of the teacher had been discussed at the Association for Medical Education in Europe (AMEE). AMEE guide No. 20 presented the major teachers' responsibilities as an information provider, role model on-the-job, and formal teaching settings, learning facilitator, student assessor and curriculum evaluator, course planner, and resource material creator. Each one of these roles was broken into more details.¹⁰

The teachers' perception regarding these twelve roles had been studied at Dundee University, and the highest-rated roles were the "Teacher in clinical or practical class setting" and "On-the-job role model". The lowest score was found to be "Production of study guides" and "Mentor, personal adviser or tutor".³ Another study conducted in Nepal discussed the roles, responsibilities, and functions of medical teachers who were required to make the education process meaningful; the study concluded that one of the most important roles is to be a leader and manager.¹¹ In three studies from Pakistan,¹² Saudi Arabia,¹³ and Malaysia¹⁴ the majority of the respondents perceived the most important role of the teacher was as an information provider, followed by an on-the-job role model. To our knowledge, there is no published research exploring the perception and commitment of pharmacy educators to their roles in Sudan. Therefore, in the current study, we aimed to evaluate the perception of faculties of their roles and current practice as pharmacy teachers at Governmental Universities in Sudan.

Materials and Methods

Study Design and Setting

A descriptive cross-sectional study design. The study was conducted in governmental colleges of pharmacy in Sudan from November 2020 to July 2021.

Study Population

The study population was staff members, including lecturers, assistant professors, associate professors, and professors at governmental pharmacy colleges in Sudan. Faculty members who are part-time staff and those who belong to a faculty with no graduates were excluded from the study.

Sample Size and Sampling

The sample size was calculated using the OpenEpi sample size calculator with 95% confidence intervals and a 5% margin of error.¹⁵ Based on the study population (population size (n) =172), the minimum sample size required for this study is 120 individuals. A simple random method was used to select the participants.

Data Collection Tools and Analysis

A self-administered questionnaire was used for data collection. In order to construct an objective-based questionnaire, the questionnaire items were derived from AMEE Guide No. 20: The good teacher is more than a lecturer, the twelve roles of the teacher.² AMEE Guide No. 20 was developed by R.M. Harden and Joy Crosby; it discusses the different roles of the medical teacher.²

The questionnaire consisted of three sections; the first part collected socio-demographic and practice information; it addressed age, gender, scientific degree, university, department, years of experience, and attendance of any training or workshop related to faculty development. The second part contained questions about the perception of importance regarding teacher roles, and it consisted of items extrapolated from AMEE Guide No. 20. Items were rated on a five-point Likert scale that scored from 1 (strongly disagree) to 5 (strongly agree). This gave a score range of 12–60 (needs some clarification). The third part of the questionnaire involved questions about the participant's commitment to the different roles stated by AMEE Guide No. 20, and it was scored using a five-point scale ranging from 1 (never) to 5 (always). Regarding the scores in perception, domains were categorized using the median value, which was found to be

55; those who scored ≥ 55 were categorized as good and bad if the value was < 55 . Regarding practice, the median value was 46; those who scored ≥ 46 were categorized as good and bad if the value was < 46 .

The questionnaire was pre-tested to check the validity and clarity of the questions. Furthermore, the questionnaire was revised by two experts. Finally, the questionnaire was distributed to the participants via a web-based Google form which was sent to them through their personal emails.

Data Analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) for Windows, version 26.0 software (Armonk, NY: IBM Corp). Descriptive statistics were used to summarize and present the data. A Chi-square test was used to assess the association between dependent and independent variables. P-value ≤ 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Technical Ethical Committee of the Sudan Medical Specializations Board (TEC-SMSB-03.2021). In addition, written informed consent was also obtained from each study participant before the beginning of the first section of the questionnaire to be ticked before the entrance, and confidentiality and anonymity of individual identity were adhered to as much as possible.

Results

Out of 125 respondents, 77 (61.6%) were female, most of them aged from 25 to 35 years old. The majorities of respondents were lecturers and had experience from 0–5 years. Almost two-thirds of participants had attended a training program in the last five years. [Table 1](#) summarizes the socio-demographic characteristics of the participants.

Regarding the perception of pharmacy educators regarding the role of teachers, As shown in [Table 2](#), most respondents perceived the teacher's most important role as a lecturer at the classroom setting or practical class, and curriculum evaluator (93.92% and 92.64%, respectively). The least perceived roles were on-the-job role model, and course organizer (85.12% and 87.2%, respectively). Furthermore, it is evident from [Table 2](#) that all the scores were with a high degree of closeness (4.26–4.7).

Concerning the practice of pharmacy educators towards the different roles, As shown in [Table 3](#), the highest committed role from teachers was lecturing in classroom settings (90.4%), and the least one was found to be the production of study guides and curriculum evaluation (63.2% and 65.92%, respectively). It is evident from the table that all the scores were located in a scattered manner (3.16–4.52).

Overall perception score of pharmacy educators regarding the role of teachers was found to be good (52.8%) with a considerable percentage as poor perception. Similarly, about half of the participants have good practice and commitment towards the role of teacher ([Table 4](#)).

Concerning factors associated with participants' perception, data analysis revealed no statistically significant association between socio-demographic data and perception ([Table 5](#)). On the other hand, age, designation, and training in health professions education during the last five years were found to have a significant association with the participants' practice with P values 0.026, 0.004, and 0.039, respectively ([Table 5](#)). Interestingly, a statistically significant association ($p = 0.043$) was also found between participants' perception and practice ([Table 6](#)).

Discussion

Pharmacy education varies significantly throughout the world, and the number of pharmacy schools and graduates is increasing in a magic manner.⁷ In Sudan, there are four governmental colleges of pharmacy which have graduates. Among these four colleges, three are located at Khartoum state (University of Khartoum, Omdurman Islamic University, and Al Neelain University), the fourth one is located at Gezira State (University of Gezira). The Faculty of Pharmacy, University of Khartoum, was established in 1964 and remained the only one for three decades.¹⁶ By now, there are more than 40 colleges of pharmacy in Sudan with a considerable number of faculties. This enormous expansion makes an assessment of perception regarding the role of health professions teachers and their commitment towards these roles an exciting era for research.

Table 1 Socio-Demographic Characteristics of Participants

Demographic Characteristics		Frequency	%
Gender	Female	77	61.6
	Male	38	38.4
Age (years)	25–35	62	49.6
	36–45	48	38.4
	>45	15	12
University	University of Khartoum	33	26.4
	University of Gezira	36	28.8
	Omdurman Islamic University	41	32.8
	Al Neelain University	15	12
Designation	Lecturer	82	65.6
	Assistant Professor	30	24
	Associate Professor	11	8.8
	Professor	2	1.6
Years of experience (years)	0–5	57	45.6
	6–10	34	27.2
	11–15	19	15.2
	>15	15	12
Department	Pharmaceutical Chemistry	30	24
	Pharmaceutics	20	16
	Pharmaceutical Microbiology	14	11.2
	Pharmacology	28	22.4
	Pharmacognosy	9	7.2
	Pharmacy practice	5	4
	Clinical pharmacy	19	15.2
Training on education improvement last five years	Yes	95	76
	No	30	24

In this study, of 125 respondents, about 61% of participants were female. Many studies revealed a high proportion of female staff compared with males.¹² However, this one is considered more than others and contradicted with other studies conducted among medical teachers at Al Qassim University and Taibah University that revealed a proportion of 1:3.4 between females and male staff,^{10,17} even it is contradicted with a study conducted among six medical colleges in Sudan in which male participation is 65%,¹⁸ which demonstrates that women in Sudan are prevailing in pharmacy teaching professions and this may be due to several demographic, economic, political and cultural factors.¹⁹

Table 2 Perception of Pharmacy Educators Regarding the Role of Teachers

Teachers' Role	Perception %	Mean	SD
Lecturer in classroom setting	93.92	4.7	0.557
Teacher in clinical or practical class setting	92.64	4.63	0.532
On-the-job role model	85.12	4.26	0.717
Role model in the teaching setting	89.44	4.47	0.642
Mentor, personal adviser or tutor	89.28	4.46	0.603
Learning facilitator	88.48	4.42	0.71
Planning or participating in formal examinations of students	92.32	4.62	0.606
Curriculum evaluator	92.8	4.64	0.559
Curriculum planner	91.36	4.57	0.614
Course organizer	87.2	4.36	0.723
Production of study guides	87.36	4.37	0.69
Developing learning resource materials in the form of computer program, videotape or print which can be used as adjuncts to the lectures and other sessions	88.8	4.44	0.766

Abbreviation: SD, standard deviation.

Table 3 Commitment of Pharmacy Educators Towards Different Roles

Teachers' Role	Practice %	Mean	SD
Lecturer in classroom setting	90.4	4.52	1.044
Teacher in clinical or practical class setting	75.52	3.78	1.217
On-the-job role model	70.24	3.51	1.248
Role model in the teaching setting	72.48	3.62	1.261
Mentor, personal adviser or tutor	76.64	3.83	1.113
Learning facilitator	73.12	3.66	1.232
Planning or participating in formal examinations of students	85.6	4.28	1.09
Curriculum evaluator	65.92	3.3	1.409
Curriculum planner	67.04	3.35	1.369
Course organizer	76.8	3.84	1.26
Production of study guides	63.2	3.16	1.37
Developing learning resource materials in the form of computer program, videotape or print which can be used as adjuncts to the lectures and other sessions	70.24	3.51	1.293

Abbreviation: SD, standard deviation.

About half of the participants were aged between 25–36 years, which aligns with a study conducted in Pakistan.¹² As most of the recruited participants were lecturers, most of them had teaching experience ranging between 0–5 years, with a considerable number having more than 15 years of experience, which is to some extent aligned with a study conducted at Melaka Manipal Medical College at Malaysia, as it also reported that most participants have experience from 1–9 years.¹⁰ The current study revealed that most of the participants (65%) are lecturers, which contradicts the findings of

Table 4 Scale System for Perception and Practice of Pharmacy Educators Regarding the Role of Teachers

Category	Perception		Practice	
	Frequency	Percentage	Frequency	Percentage
Good	66	52.8%	67	53.6%
Poor	59	47.2%	58	46.4%

a study conducted among medical colleges in Sudan, where 49% of participants were assistant professors.¹⁸ Also, our findings do not agree with the results of a study conducted in Melaka Manipal Medical College in Malaysia, where most of the respondents were associate professors.¹⁰

Continuing Professional Development (CPD) programs for teachers at all levels are essential in enhancing the teaching skills, beliefs, and attitudes in daily life practices in different settings.²⁰ Most respondent faculties (76%) attended one or more training on education improvement in the last five years. Training programs can be enhanced by aligning with the requirement of accreditation and involvement of trainers' autonomy in specifying their own needs.²¹

The model of twelve roles of teachers provides a good overview of the functions they must fulfill during their practice.² On the other hand, the teacher's role has shifted dramatically to include personal characteristics such as passion, motivator for the students, and other different roles.⁴ Exploring teachers' preferences at pharmacy colleges toward the twelve roles of teachers in this study revealed that the majority of faculty members perceived the most important role of pharmacy teacher as a lecturer at classroom setting, which is consistent with the teacher-centered curriculum model adopted by most of the pharmacy schools in Sudan, where a didactic lecture is the main information providing tool. These findings aligned with a study conducted in Pakistan among faculties of three medical colleges,¹² and deviated from that perceived by medical teachers at Al-Qassim University that ranked it as the sixth most important one and that of lecturer at the clinical setting to be the first among twelve.¹² This study indicated the role of the faculties as role models in teaching settings given higher percentages than the production of the study guide and course organization. These findings indicated that most pharmacy teachers perceived their least important role as an on-the-job role model, which contradicted the perception of Al-Qassim faculty, who selected it as the second most important role.¹³

In the current study, the overall perception score was 4.495 ± 0.136 , which is the same as that found at Dundee University (4.495 ± 0.136),³ and higher than that conducted in Islamabad University (3.975 ± 0.253).¹² The role of the teacher as information provider in a classroom setting was perceived as the most important in Sudan and the second one in Islamabad and ranked as the sixth important one at Dundee; this difference in means may be mainly due to the innovative teaching strategy that followed at Dundee which further may change the mindset of these teachers. Other factors that attributed to these differences were the training of faculty members, the educational environment, and cultural reasons. In addition, due to the lack of the proper resources and infrastructure required to implement a modern, student-centered curriculum, Sudan still depends on the traditional curriculum to teach undergraduate students.

Regarding current practice and commitment to different roles among pharmacy teachers, they revealed that they are highly committed to being a lecturer in the classroom setting. This is obviously due to the context where learning is delivered via a teacher-centered approach, despite many efforts exerted to shift toward a student-centered approach.³ The least roles that pharmacy teachers were committed to being the production of the study guide and curriculum evaluation. These findings contrast with previous reports that highlighted the high commitment of faculty members to the other teacher roles, including planning and controlling the curriculum, leadership and managerial role, and resource developer.²²

When the commitment was compared with age, a significant difference demonstrated that the higher age group had a better commitment toward different roles ($p = 0.026$). The designation was also found to have a significant relationship with a higher degree (associate and assistant professor) appeared to have a better commitment than a lecturer ($p = 0.004$), which indicated that senior faculty members had more educational experience, particularly as a curriculum evaluator and assessor than junior faculty members, the same findings were observed in a previous study.¹³ Implementation of an

Table 5 Association of Socio-Demographic Data with Perception and Practice

Demographic Characteristics		Score of Perception		P-value	Score of Practice		P-value
		Good	Bad		Good	Bad	
Gender	Female	39	38	0.542	42	35	0.788
	Male	27	21		25	23	
Age (years)	25–35	29	33	0.364	26	36	0.026*
	36–45	29	19		30	18	
	>45	8	7		11	4	
University	University of Khartoum	17	16	0.730	13	20	0.179
	University of Gezira	20	16		23	13	
	Omdurman Islamic University	23	18		24	17	
	Al Neelain University	6	9		7	8	
Designation	Lecturer	41	41	0.825	35	47	0.004*
	Assistant Professor	18	12		21	9	
	Associate Professor	6	5		10	1	
	Professor	1	1		1	1	
Years of experience (years)	0–5	34	23	0.507	25	32	0.102
	6–10	15	19		18	16	
	11–15	9	10		13	6	
	>15	8	7		11	4	
Department	Ph. Chemistry	13	17	0.238	19	11	0.568
	Pharmaceutics	7	13		7	13	
	Ph. Microbiology	10	4		9	5	
	Pharmacology	16	12		14	14	
	Pharmacognosy	4	5		5	4	
	Pharmacy practice	3	2		3	2	
	Clinical pharmacy	13	6		10	9	
Training on education improvement last 5 years	Yes	47	48	0.185	46	49	0.039*
	No	19	11		21	9	
Training addressing role of teachers	Yes	39	27	0.542	37	40	0.115
	No	38	21		30	18	

Note: *Significant difference between the compared groups at p-value < 0.05.

effective continuing professional development program and presence of a coaching and mentoring system could facilitate the smooth transfer of professional skills to the junior faculty members.

The third factor that appeared to play a great role in perception and was found to have a significant relationship with the commitment to different roles is the training on education improvement in the last five years ($p = 0.039$), which

Table 6 Association Between Perception and Practice

Score of Practice	Score of Perception		P-value
	Good	Bad	
Good	41	25	0.043*
Bad	26	33	

Note: *Significant difference between the compared groups at p-value < 0.05.

revealed the importance of training programs and workshops in increasing the level of faculty member's awareness towards teacher roles and commitments. Since well-qualified teachers have been recognized as the most important cornerstone within the education system, professional development through the implementation of continuing professional development programs is essential for promoting teachers and improving school effectiveness.^{23–25}

The main limitation of this study is that the survey was conducted at a limited number of universities, so the results cannot be generalized to all Sudanese pharmacy teachers. The second limitation is that the study did not assess the factors affecting the perceptions of the pharmacy teachers. Thus, a larger multicenter study to understand faculty members' perceptions is highly needed. Also, qualitative studies may also be recommended to understand and explore the in-depth reason for the faculty member's perception of their roles, which may help to identify the problems related to teacher perceptions, and aid in constructing training programs to fill the gaps for the faculty members.

Conclusion

Pharmacy educationalists who participated in the study perceived their primary role as lecturers in a classroom setting. Only half of them had good perceptions of these roles and a good commitment to them. The perception of pharmacy educationalists affected their commitment to teachers' roles significantly. Periodic training sessions have to be conducted for all faculties at pharmacy colleges to enhance the perception and commitment regarding the roles of teachers. Other studies at all levels, even for practitioners at health institutions, should be done to assess the current practice and how it can be further improved.

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