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Knowledge and Attitude towards Board of Pharmacy Specialties (BPS) Certification among Pharmacists and Pharmacy Students: A Cross Sectional Survey

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ABSTRACT

Background: *For decades, the American Board of Pharmacy Specialties (BPS) has provided specialty certification programs for pharmacists. As pharmacists become involved in more advanced patient care services, board certification becomes an essential component to ensuring quality care. The aim of this study was to measure the self-reported knowledge and attitude towards the BPS certification.* ***Methods:*** *A cross sectional study included all pharmacy students and pharmacists at King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) and King Abdulaziz Medical City (KAMC), respectively. However, the administrative pharmacy staff was not included. This is a manually distributed survey was adopted from previous published observational study. The survey included 6 demographic, 12 knowledge and 15 attitude questions where the participant rank from 1 to 5 (1: very poor, 2: poor, 3: Average, 4: good and 5: very good). This study is approved by IRB. Descriptive statistics were primarily used to analyze data. Categorical responses were compared using Chi-square tests.* ***Result:*** *In total of 221 participants agreed to participate in the study based on convenient sampling, there were more female participants (134, 60.6%) than male (87, 39.4%). More number of participants (191, 86.4%) were under the age-group ≤ 30 years. The overall mean age was found to be 25.20 ± 5.86 (20-60) years. Among 221 participants, 118 (53.4%) were students and 103 (46.6%) were employees. The current study found that 55.2% of respondents have a good knowledge about BPS certification. However, only 48.4% of participants reported their interest in pursuing board certification in their future career.* ***Conclusion:*** *Many respondents were aware of BPS certification, learning the most through didactic and experiential activities, and many indicated they are considering pursuing BPS certification. College of pharmacy and professional organizations can help provide educational session regarding board certification and professional development opportunities.*

Keywords: Knowledge, Attitude, BPS, Certification

INTRODUCTION

The Board of Pharmacy Specialties (BPS) which was established by the American Pharmacists Association (APhA) in 1976 grants certification to pharmacists in different specialties. The main goal of board certification is to improve the quality of care provided to patients and to achieve better outcomes [1].

The number of certified pharmacists has increased continuously since the board's establishment as the number of available specialties and number of clinical pharmacists seeking certification increased. Several specialties are currently available including geriatric, nuclear, nutrition, oncology, pharmacotherapy, psychiatric, and ambulatory care pharmacy. Those specialties will improve the quality of care that pharmacists provide in their daily practice [1,2]. Approximately 19,000 pharmacists have been certified in different specialties as of 2003 [2]. Critical care and pediatric

pharmacy were added on April 12, 2013 to the certifiable specialties. Furthermore, specialties like cardiology, pain and palliative care and infectious disease were added as qualifications on top of pharmacotherapy [3-5].

BPS certification chiefly affects pharmacists few years after becoming a practitioner; nevertheless, due to the evolving role of BPS certification, it may be crucial for student pharmacists to be aware of it and its importance. There have been many white papers discussing the significance and value of BPS certification by pharmacy organizations including APhA, the American College of Clinical Pharmacy (ACCP), and the American Society of Health-System Pharmacists (ASHP), as the role of pharmacist has clearly shifted, in these recent years, from a product-centered model to a more patient-centered practice [6-8]. In a 2006 ACCP's white paper, authors predicted that in 20 to 30 years, pharmacy technicians will take the primary role in dispensing prescriptions and pharmacists will be responsible for providing direct patients care. Furthermore, the majority of clinical pharmacists will be certified in a model similar to medical professionals [5-9]. In addition, board certification is supported by the ACCP for pharmacists who are responsible for pharmacotherapeutic interventions in patients with complicated or special drug therapy needs [10-12].

BPS estimated that there will be a need for 30,000 certified specialized pharmacists [13]. The ASHP also supports the certification of pharmacists who provide direct patient care in their daily practice. ASHP stated that pharmacists who spend the majority of their time in a pharmaceutical care specialty area should pursue certification if available [8]. The APhA have also addressed and appreciated the value of BPS certification among certified pharmacists [6]. Due to the aforementioned importance of pharmacy board certification, it is important for pharmacy students who are enrolled in clinical training sites to know and consider certification as an integral part of their future career plans. Even though the value of certification is not fully accepted by some institutions or the public, the motivations behind pursuing certification have been studied. According to Toussaint, et al., personal growth and recognition in the field were the most common motivations [14]. An additional motivation is that there are some work places that favor board certified pharmacists and usually assign them more responsibilities [15,16].

Several steps must be taken to achieve the vision of having higher numbers of board certified pharmacists and recognizing BPS certification as an accepted and respected certification process, both within and outside the pharmacy profession. One of the important actions that should be taken is to educate current pharmacy students and junior pharmacists about the process and importance of becoming a board certified pharmacist. To that end, there was a collaborative effort between colleges and the BPS to encourage pharmacy students to pursue BPS certification after graduation [6]. In addition, the ACCP urged pharmacy practice faculty to pursue board certification due to the strong influence of academic role models in evolving pharmacy culture [4,17].

Locally, few published work reported on whether or not student pharmacists are aware or knowledgeable about BPS certification. A report by ASHP showed that 73.2% of students were aware of BPS certification. In addition to that, majority of students learnt about board certification during the clerkship year from preceptors and faculty members through required courses [18].

As there is a significant room for extra and deeper research in the area, this study aims to determine the level of knowledge and awareness of the BPS certification by pharmacy students and pharmacists in King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) and King Abdulaziz Medical City (KAMC), respectively. It evaluates students and pharmacists' perceptions of effective educational formats for learning about BPS certification and assesses students and pharmacists' interest in obtaining BPS certification in their future careers.

METHODS

Study Design

A cross sectional study was conducted using a structured questionnaire. The questionnaire was distributed to the targeted students by convenient sampling at KSAU-HS and the pharmacists working at KAMC, Central Region of Saudi Arabia. The questionnaire was adopted from previous study after reviewing the literature [4]. The final instrument included 6 demographic, 12 knowledge questions and 15 attitude questions. The knowledge score is a composite score of answers of 12 questions where the responses are rated on a 1 to 5 scale, (1: very poor, 2: poor, 3: Average, 4: good and 5: very good). Similarly, attitude score is a composite score of answers of 15 questions where the responses are rated on a 1 to 5 scale, where 5 is the highest.

Hard copies of questionnaire were distributed to participants who agreed to be enrolled in the study. The participants have been assured that they can withdraw at any time without any negative effect. The study included Pharmacy students and interns at KSAU-HS and pharmacists at the KAMC. However, the administrative pharmacy staff was not included.

Statistical Analysis

Raw data were processed in accordance with the best practices. Statistical analysis was performed using SPSS version 21. Descriptive statistics were reported as mean and standard deviation for continuous variable, while categorical variable was given as percentages and proportions. Differences between groups were determined by Chi-Square test, t-test and ANOVA depending on the type of the variable. All statistical tests were declaring significance at p-value less than 0.05.

RESULTS

A total of 221 participants agreed to participate in the study. Table 1 shows the baseline characteristic of the respondents. There were more female participants (134, 60.6%) than male (87, 39.4%). More number of participants (191, 86.4%) were under the age-group ≤ 30 years. The overall mean age was found as 25.20 ± 5.86 (20-60) years. Among 221 participants, (118, 53.4%) were students and (103, 46.6%) were employees. Out of 118 students, (44, 37.3%) were in professional year III followed by (43, 36.4%) were in professional year II, (27, 22.8%) in professional year I and only (4, 3.39%) students in professional year I. Out of 103 employees, (58, 56.3%) were working in inpatient pharmacy, and (45, 43.7%) were in outpatient pharmacy.

The data analysis showed a statistically significant association between occupational status (Student and Employees) and age. However, there were no statistically significant association with gender (p=0.219). The comparison between age and occupational status with mean age of the student (21.31 ± 1.08) and of the employees (29.17 ± 7.05) showed a statistically significant difference (p=0.0001).

Knowledge of Pharmacy Students and Employee about BPS Certification

The current study found that 55.2% of respondent have a good knowledge about pharmacy board certification. The level of knowledge was significantly more in employees as compared to students (p<0.001). Survey analysis shows that, 122 (55.2%) responded "yes" to the question "Are you aware of BPS (Board of Pharmacy Specialties) Certification prior to survey?" Sixty nine (31.2%) responded as strongly agree to the question "My knowledge level of BPS certification", Eighty (36.2%) responded as strongly agree to the question "My knowledge regarding the requirements to take exam", Ninety three (42.1%) responded as strongly agree to the question "My knowledge regarding how to prepare for the exam", One hundred and eleven (50.2%) responded as strongly agree to the question "My knowledge regarding the cost of the exam", One hundred and five (47.5%) responded as strongly agree to the question "My knowledge regarding the components of the exam", One hundred and five (47.5%) responded as strongly agree to the question "My knowledge regarding how to maintain my certification", Seventy seven (34.8%) responded as strongly agree to the question "My knowledge regarding the areas of specialization available", Ninety nine (44.8%) responded as strongly agree to the question "My knowledge regarding the added qualifications available".

Table 2 shows the comparison of mean scores of knowledge and attitude among pharmacy students and pharmacists. It is showing a statistically significant difference in knowledge scores but not in the attitude scores.

Attitude of Pharmacy Students and Employee about BPS Certification

Only 48.4% of participants reported their interest in pursuing board certification in their future career. Survey data analysis shows that, eighty-nine (40.3%) responded as strongly agree to the question "Pharmacist specialization is not formally recognized in my practice of area". Sixty eight (30.8%) responded as strongly disagree to the question "I do not require certification to practice in my specialty area", One hundred (45.2%) responded as undecided to the question "My employer does not support certification (e.g., pay for studies, exam, and/or certification process)", Seventy eight (35.3%) responded as undecided to the question "Pharmacist specialty certification is not currently available in my specialty area", Eighty two (37.1%) responded as undecided to the question "There is limited demand for specialty certification (e.g., patients don't ask to see my credentials when I provide specialty care to them), Seventy (31.7%) responded as undecided to the question "I do not have enough time in my schedule to become certified", One

hundred and four (47.1%) responded as undecided to the question "It is too expensive to obtain formal certification", Eighty nine (40.3%) responded as undecided to the question "Pharmacist specialty certification is not accessible for me (e.g., language, travel requirements)", One hundred and one (45.7%) responded as undecided to the question "There is a little support for pharmacist specialization from other health care providers", One hundred and fifteen (52.0%) responded as undecided to the question "There is no reimbursement models for specialty clinical services", One hundred (45.2%) responded as undecided to the question "Certification preparation consumed my time", Seventy two (32.6%) responded as strongly agree to the question "Lack of public awareness of pharmacist specialties", Ninety three (42.1%) responded as strongly agree to the question "Limited perceived value in pharmacist specialty certification among employers", Ninety four (42.5%) responded as undecided to the question "Limited ability to deliver specialist services in community practice settings", Eighty (36.2%) responded as undecided to the question "Lack of understanding among pharmacists about career paths associated with various pharmacist specialty certifications".

Table 2 shows the comparison of mean scores of knowledge and attitude among pharmacy students and employee. Students' knowledge scores were lower than employees' knowledge scores with statistically significant difference, while the attitude scores were not statistically different between students and employees.

The results of comparison between knowledge scores and demographic factors are shown in Table 3. The age group 31 and above years were having higher mean knowledge score than other groups and the test was statistically significant with ($p<0.001$). In gender, males were having higher knowledge score than females, however, the test was not statistically significant. Regarding the year of study of students, mean knowledge score was highest in third professional year followed by fourth professional year and the test was statistically significant with ($p<0.001$). Finally, in terms of the years of experience, highest mean knowledge score was in the group of "5-10 years' experience" however, the test was not statistically significant.

The results of comparison between attitude scores and demographic factors are also shown in Table 3. In age groups, ≤ 30-year group were having higher mean attitude score than other group and the test was not statistically significant. Interestingly, female, were having higher attitude score than male and the test was statistically significant ($p=0.018$). In terms of the year of study of students, the mean attitude scores were similar in second, third and fourth professional years but the test was not statistically significant. Finally, in terms of the years of experience, the comparison test was not statistically significant among groups.

Table 1 Baseline characteristics

Basic characteristics	No. of students/employees (n)	Percentage (%)
Gender		
Male	87	39.4%
Female	134	60.6%
Age (in years)		
≤ 30 years	191	86.4%
≥ 31 years	30	13.6%
Occupational status		
Student	118	53.4%
Employee	103	46.6%
Studying in professional year (N=118)		
I	27	22.8%
II	43	36.4%
III	44	37.3%
IV	4	3.8%
Working place (N=103)		
Inpatient pharmacy	58	56.3%
Outpatient pharmacy	45	43.7%
Years of experience (in years) (N=103)		
Fresh graduate	11	10.7%
<5	50	48.5%
5-10	23	22.4%
>10	19	18.4%

Table 2 Comparison of mean scores of knowledge and attitude between pharmacy students and employee groups

Total No. of respondents		Mean	SD	t-value	p-value
Knowledge scores	Students (n=118)	16.32	6.129	-6.161	0.0001
	Employee (n=103)	22.87	9.509		
Attitude scores	Students (n=118)	40.72	8.845	-1.029	0.304
	Employee (n=103)	42.16	11.821		

Table 3 Comparison of mean knowledge and attitude scores by participants' demographic factors (N=221)

Factor	N	Knowledge ± SD	p-value	Attitude ± SD	p-value
Age (in years)					
≤ 30 years	191	18.42 ± 7.67	0.0001	41.63 ± 9.80	0.377
31 and above	30	25.47 ± 11.00		39.83 ± 13.36	
Gender					
Male	87	20.62 ± 9.48	0.08	39.34 ± 11.26	0.018
Female	134	18.57 ± 7.77		42.72 ± 9.51	
Year of study (N=118)					
First professional year	27	14.85 ± 4.07	0.0001	38.93 ± 9.17	0.7
Second professional year	43	14.19 ± 5.71		41.21 ± 8.99	
Third professional year	44	19.30 ± 6.45		41.27 ± 8.95	
Fourth professional year	4	16.50 ± 7.33		41.50 ± 2.65	
Years of experience (N=103)					
Fresh graduate	11	20.09 ± 11.18	0.231	43.45 ± 10.74	0.423
<5 years	50	22.18 ± 8.33		43.52 ± 10.50	
5-10 years	23	26.30 ± 9.88		41.74 ± 14.65	
More than 10 years	19	22.16 ± 10.64		38.32 ± 11.98	

DISCUSSION

The current study found that almost half of the respondents have a good knowledge about pharmacy board certification. The level of knowledge was higher in employees as compared to students. This is expected since employees are more exposed to career pathways for pharmacy and they may have worked with board certified pharmacists. Similarly, the level of knowledge was higher in senior students as compared to junior students. This can be explained by that students as they progress in their studies will encounter more exposure to clinical practitioners who are more likely aware of certification as compared to junior students who are not having the same exposure. Interestingly, 44.8% of participants rank their knowledge as moderate to poor about board certification. Therefore, it is really important to address this issue of lack of awareness throughout college years and/or during continuous education sessions. This may increase the level of knowledge about board certifications and other postgraduate opportunities for pharmacists and pharmacy students. The lack of knowledge towards board certification may be attributed to the small number of certified practitioners in general.

Almost half of the participants reported their interest in pursuing board certification in their future career. More encouragement for students and employees to seeking board certification is important since that will impact the practice and the quality of care provided to patients. Interestingly, only 36.2% of participants know correctly how to take board certification exam and the requirements needed for certification candidacy. In addition, 47.5% of them knew about the components of the exam. More educational sessions and preparatory courses are warranted to make the picture clear

for those interested in pursuing certification.

Another important finding from this survey is attitude towards board certification among employee and pharmacy students. Our study revealed that 40.3% think that pharmacy specialization is not formally recognized in practice. Such perception is considered one of the factors that explain less interest in seeking certification. According to Penm, et al., lack of public awareness of pharmacy specialties was one of the barriers for pursuing such certification [19]. Furthermore, the majority of participants 40.3% have concerns regarding reimbursement for exam and preparation fees. As reported in previous studies, lack of reimbursement was one the main barriers for seeking certification [19]. Time for preparation for the exam was reported as one of the obstacles for seeking certification. This is consistent with previous studies assessing barriers for pursuing pharmacy specialization [19-21]. Providing more time and incentives for pharmacists will increase their interest in seeking board certification, and thus, improving the quality of practice.

There were some limitations in our study. The sample size was not distributed well among students and employee. The students' distribution according to educational level was not balanced. In addition to that the study only included KSAU-HS students which may limit the interpretation of their knowledge and attitude towards board certification relevant to the specific university/college environment. Similarly, the employees were all pharmacists at KAMC and the relevant information regarding board certification is limited to the requirements of practices in this facility.

CONCLUSION

The knowledge about BPS certification is fairly good. Several efforts should be done to encourage pharmacy students and pharmacists to seek board certification. Many participants showed some interest to be certified someday. Board certification provides many specialties that are expanding and this will increase opportunities for pharmacy students and pharmacists which eventually will improve the quality of pharmaceutical care provided to patients.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

REFERENCES

[1] Board of Pharmacy Specialties. Spring 2014 candidate's guide, 2019.

[2] Board of Pharmacy Specialties. Board of Pharmacy Specialties announces results of 2013 Certification and Recertification Exams, 2014.

[3] Board of Pharmacy Specialties. Board of Pharmacy Specialties announced new specialties in critical care pharmacy and pediatric pharmacy, 2013.

[4] Board of Pharmacy Specialties. BPS approves ambulatory care designation; explores new specialties in pain and palliative care, critical care and paediatrics, 2011.

[5] Board of Pharmacy Specialties. BPS announces cardiology and infectious diseases practice analysis taskforce appointments, 2012.

[6] Saseen, Joseph J., et al. "Future clinical pharmacy practitioners should be board-certified specialists." *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy,* Vol. 26, No. 12, 2006, pp. 1816-25.

[7] Pradel, Françoise G., et al. "White paper: Value of specialty certification in pharmacy." *Journal of the American Pharmacists Association,* Vol. 44, No. 5, 2004, pp. 612-20.

[8] American Society of Health-System Pharmacists. "ASHP long-range vision for the pharmacy work force in hospitals and health systems." *American Journal of Health-System Pharmacy,* Vol. 64, No. 12, 2007, pp. 1320-30.

[9] Blair, Melissa M., et al. "Proposed revision to the existing specialty and specialist certification framework for pharmacy practitioners." *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy,* Vol. 29, No. 4, 2009, p. 489.

[10] American College of Clinical Pharmacy, et al. "Desired professional development pathways for clinical pharmacists." *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy,* Vol. 33, No. 4, 2013, pp. e34-42.

[11] American College of Clinical Pharmacy. "Board certification of pharmacy specialists." *Pharmacotherapy,* Vol. 31, No. 11, 2011, pp. 1146-49.

[12] American College of Clinical Pharmacy. "Board of regents commentary qualifications of pharmacists who provide direct patient care: Perspectives on the need for residency training and board certification." *Pharmacotherapy,* 2013 Vol. 33, No. 8, 2013, pp. 888-91.

[13] Board of Pharmacy Specialties. Board of Pharmacy Specialties white paper: Five-year vision for pharmacy specialties, 2013.

[14] Toussaint, Kimberly A., et al. "Prevalence of and factors that influence board certification among pharmacy practice faculty at United States colleges and schools of pharmacy." *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy,* Vol. 33, No. 1, 2013, pp. 105-11.

[15] Gourley, D. R., Jr WL Fitzgerald, and R. L. Davis. "Competency, board certification, credentialing, and specialization: Who benefits?" *The American Journal of Managed Care,* Vol. 3, No. 5, 1997, pp. 795-801.

[16] Gebhart F. Drug Topics: Voice of the Pharmacist. Ambulatory care specialty certification under study. Advanstar Communications, 2007.

[17] Haines, S. T., M. R. Andrus, and M. Badowski. "ACCP Position Statement: board certification of pharmacist specialists." *Pharmacotherapy,* Vol. 31, No. 11, 2011, pp. 1146-49.

[18] Wood, Kristina D., et al. "Evaluation of student pharmacists' awareness, perceptions, and interest in pursuing board certification." *Currents in Pharmacy Teaching and Learning,* Vol. 7, No. 1, 2015, pp. 54-61.

[19] Penm, Jonathan, et al. "Need for formal specialization in pharmacy in Canada: A survey of hospital pharmacists." *The Canadian Journal of Hospital Pharmacy,* Vol. 69, No. 5, 2016, pp. 356-66.

[20] El-Sobky, Y., et al. "The Impact of the American Board Certification on the Egyptian Pharmacists." *AMPSR,* Vol. 1, No. 1, 2017, pp. 2-10.

[21] Pradel, Françoise G., et al. "White paper: Value of specialty certification in pharmacy." *Journal of the American Pharmacists Association,* Vol. 44, No. 5, 2004, pp. 612-20.