

Impact of International Accreditation in Pharmacy Education: Pharmacy School Students' Perspective

Rula Darwish^{1,*}, Mohammad Saleh², Khawlah Ammar³, Mohammad AlMasri⁴

¹Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, JORDAN.

²Biopharmaceutics and Clinical Pharmacy, School of Pharmacy, The University of Jordan, JORDAN.

³King Hussein Cancer Center, Survey Unit, Amman, JORDAN.

⁴School of Medicine, The University of Jordan, Amman, JORDAN.

ABSTRACT

Background: The accreditation of undergraduate Pharmacy Schools is an important quality assurance process. In spite of the widespread adoption of international accreditation processes and an increasing attention on accreditation as a mechanism to ensure minimum standards are met, there is little evidence to support their effectiveness. **Objectives:** To assess the School of Pharmacy students' and new graduates' views on the impact of international certification on their education and career and whether this experience could be used to improve the pharmacy education program and environment. **Methods:** A descriptive cross-sectional survey was used with six major themes focusing on, student-faculty-administration relationships, student support, learning environment and pedagogical methods, library and electronic learning resources, experiential training and the educational program as a whole. Four hundred forty-nine participants completed the survey from which fifty-two were new graduate. **Results:** School of Pharmacy students' and new graduates have positive perception of international certification. Participants agreed that the certification process has been beneficial in terms of enhancing the overall program quality, the quality of education, learning environment, program structure, students support as well as enhancing opportunities. Misperceptions, however, existed about potential opportunities available to graduates of internationally certified programs. **Conclusion:** This research carries value to university administrators and education policy-makers in terms of improving regulations and targeting students to ensure promising academic environment and improve the image of the educational institutions.

Key words: Accreditation, International certification, Pharmaceutical education, Students, Pharmacy, Learning environment.

INTRODUCTION

Recently, international accreditation has captured interests and concerns of Schools of Pharmacy. While it is a voluntary process, it would ensure that education provided by schools meets globally acceptable levels of quality. School's possession of accreditation status can be very reassuring to the community, researchers, stakeholders and job market. In spite of the widespread adoption of international accreditation processes and an increasing attention on accreditation as a mechanism to ensure meeting standards, there is little evidence supporting their effectiveness. As more schools and countries adopt standards

of international accrediting bodies, it is important to consider the challenges facing students and graduates and probably adopt educational reform initiatives. Accreditation Council for pharmacy Education offers through International Services Program (ISP) professional degree program certification worldwide to stakeholders who seek guidance related to quality assurance and advancement of pharmacy education and thus assist schools of pharmacy to improve the quality of their degree program. The major focus of this accrediting body is on supporting quality improvement efforts and initiatives of schools of pharmacy.

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Correspondence:

Prof. Rula M Darwish

Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, JORDAN.

Phone no: +96-2795558089

Email id: rulamdarwish@yahoo.com



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The University of Jordan was the first school in Jordan to apply for and receive ACPE Certification of its BS and Pharm D programs using the ACPE International Quality Criteria.¹ As a result, several important progresses occurred including improvements related to: experiential training, teaching methodologies, assessment methods, students' involvement in different activities in addition to better documentation processes. Students' involvement and assessment of changes happening in the school as a result of accreditation is very important. Feedback provided by students can strengthen the accreditation process. Students' opinion would also strengthen the institution by providing feedback to faculty members and administrators at levels students know best. Much of university-specific education research has been conducted on student engagement.^{2,3} However, little investigation was performed on students' engagement within a college rather than to its greater university, especially when that college must adhere to additional differing certification standards. Students' opinion and outcomes can be used as a guide for future improvement. Moreover, students' belief that the program, teaching methods, academic counseling, faculty accessibility, facilities and library are improving would lead to more self-assurance and may encourage to developing self-directed learning qualities which are important to the growth and success of the pharmacy profession, beginning with the education of pharmacy students. The 2016 ACPE Accreditation Standards expressed the importance of schools integrating teaching, learning methods and outcome statements that help students transition from dependent to active, self-directed lifelong learners.⁴ As for teaching methodologies, ACPE standards in 2007 encouraged use of active learning strategies and other high level pedagogical strategies. Later ACPE 2016 standards advocate for teaching and learning methods that actively engage learners, promote self-directed learning and foster collaborative learning. This work investigated the impact and value of the international accreditation process on students and new graduates of School of Pharmacy which has been internationally certified by the ACPE in terms of their confidence in their education and their belief that employers can trust that graduates of internationally certified programs are prepared to enter the workforce. Furthermore, the work focused on participants' opinions on major areas which can directly or indirectly affect the education quality. This work will pave the way for our potential future study to compare students' perceptions of the improvements achieved after certification for all pharmacy schools in Jordan.

MATERIALS AND METHODS

Study design and study tool

A descriptive cross-sectional survey was used between February and May 2017. Six major themes were focused on namely; student-faculty-administration relationships, student support, learning environment, library and electronic learning resources, experiential training and the educational program as a whole. A structured survey was developed by reviewing relevant literature used previously in similar studies.^{5,6} An expert committee of faculty members from different departments, some were involved in the certification process others were not, to assure absence of bias, designed the survey and tailored it to the school's setting to assure its applicability. Content validity of the tool was assessed by experts and was considered valid then was translated into Arabic. Validity of the translation was assured by consulting personnel who are fluent in both languages. Furthermore, it was field-tested on a pilot sample of 25 students (about 5% of the target sample) to clarify any ambiguities. The survey comprised a total of 46 closed-ended questions divided into six sections. The first part covered participants' demographic data including education level and major. The first section focused on student-faculty-administration relationships, administration awareness of students' problems and their responses to students' concern. The second section covered students' support and learning environment. The third section was about library and electronic learning resources. The fourth part focused in the educational program as a whole including academic and personal counseling. The learning environment and its suitability and improvement was covered in the fifth section. While the last section discussed the educational program as a whole and changes that were felt by students after certification.

The study participants and study sample

School of Pharmacy students in the University of Jordan from third until sixth year whose numbers amounted to nearly 1406 students in 2017, in addition to 52 new graduates. Participants were selected if they were in the school before and after the certification review of the program. Based on Best Practices for Survey Research Reports,⁷ Implications of Target Participants, Probability Sampling and Response Rate, the minimum needed sample size to represent our sample is 306 students, our sample included 449 participants. Students were asked to complete electronic surveys at the beginning of different classes after obtaining the instructors' permission. The link was opened for 2 lectures randomly selected for each year, the sample was 397 from our targeted participants ($n = 1406$) which is a sufficient number (supposing 2%

of students were absent).⁸ Completed anonymized surveys were collected at the end of the classes. New graduates, some of them were students at the time of the certification process, filled 52 surveys.

Data analysis

Descriptive and reliability analysis was performed using SPSS v.19. Associations between different responses or demographic variables were conducted using Chi-square test. *P*-values of 0.05 or less were considered significant. Questions were grouped as previously mentioned sections and answers options were five Likert Scale; strongly agree, agree, neutral (or unable to comment for certain questions), disagree, strongly disagree. To simplify reporting, strongly agree and agree were considered as one group and strongly disagree and disagree considered the same too.

Questionnaire results were compared between BS students and Pharm D students. For each questionnaire response (Figures 1-4), a contingency table was constructed from two variables, namely student major (BS or Pharm D) and response to questionnaire question (agree, nor opinion, or disagree). Chi-square *p*-value was then computed using SPSS. Proportion for each response were then compared based on student major with appropriate adjustment of the *p*-value using bonferroni method.

RESULTS AND DISCUSSION

Students enroll at a school to pursue successful educational experiences and credentials. Students need access to professionally productive faculty, healthy environment and adequate resources. International certification should help in achieving satisfaction and improve institutional performance. Satisfied -students are expected to be more motivated to improve their overall performance thus might become active learners rather than dependent ones. Guidelines and Standards set by ACPE emphasizes the significance of schools integrating teaching and learning methods and outcome statements that will lead students to change from dependent to active, self-directed lifelong learners. In this students and new graduates were asked whether they agreed or not on positive changes that happened in their school as a result of the international. A reliability analysis was carried out to assess the internal consistency of the questionnaire. Cronbach's alpha computed for the current questionnaire was 0.957 which indicates excellent reliability.⁹ One hundred seventy-one BS (38.8%) and 278 (61.9%) Pharm D students (age 21-25years old) were involved in the study. Figure 1; A

showed that almost three quarters (73.9%) of participants agreed that certification improved their confidence in their education with (73.1%) agreeing that the certification improved the quality of education delivered by school. As for participants agreeing that changes happened in employers trust in graduates of accredited programs and whether they met educational requirements necessary to enter the workforce and enhance the mobility, were 78.6% and 63.5% respectively. This is probably because they believe that employers understood that school seeking international certification would emphasize on competence and professionalism of their pharmacy graduates. This was in agreement with findings by Sealy *et al.*⁹ which showed that feedback from key stakeholders on the quality of pharmacy graduates is above average, however additional work is needed to address some deficiencies. Pharmacy students could be required to complete a series of studies and training to address shortcomings and to narrow gaps found between actual working environment and their education.⁹ Therefore, School of Pharmacy should emphasize on learning goals and articulate academic standards to meet stakeholders' expectations as well as preparing students to be lifelong learners and ensuring their readiness for continuing professional development (CPD). Richard O'Brocta *et al.*¹⁰ Showed that integrating CPD requirements for students in schools of pharmacy is important to students'

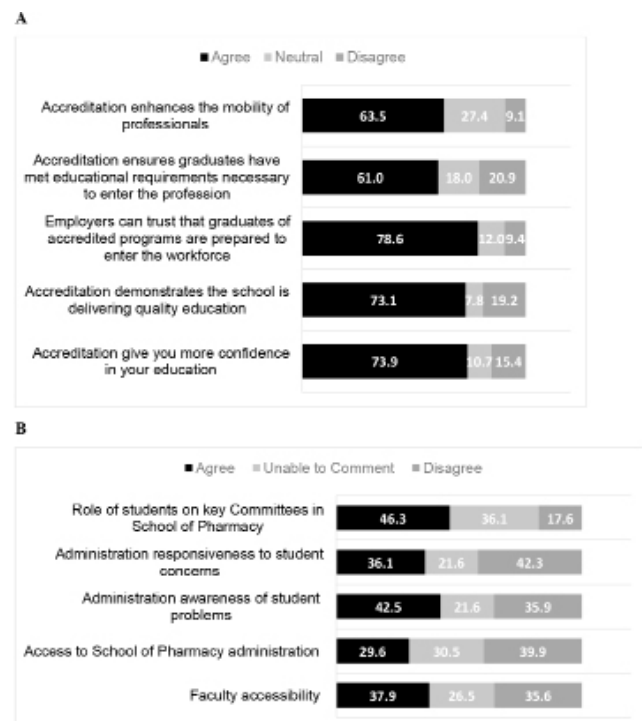


Figure 1: Accreditation Impact on Employment from Students' Point of View; B: Students' Responses Percentages for Student-Faculty-Administration Relationships.

development of life-long learning skills. Consequently, it is recommended that School of Pharmacy start building the culture of CPD from the early years of study.

Another challenge that was revealed in this study was related to student-faculty and student-administration relationship. Figure 1; B showed that participants who agreed that accessibility of faculty and administration improved after certification were only 37.9% and 29.6% respectively. A percentage of 42.5% of participants agreed that administration awareness of student problems improved however, only 36.1% agreed that administration responsiveness to student concerns improved after certification. About 46.3% of participants agreed that the role of students on key committees improved while 17.6% didn't agree. These low percentages are alarming, literature has shown that interactions between faculty and students in and outside classrooms to have significant impact on students.¹¹ ACPE Standards acknowledge the importance of faculty engagement and embraces its effects on educational outcomes.⁴ Thus academic orientation programs designed to help students understand the nature of the relationship between students and faculty in college and designed to help students become integrated into academic life in college may be important as suggested by Terenzini and Wright.¹² Figure 2 showed that almost half of the participants (49.0%) agreed that availability of tutorials help improved after certification and although 46.5% agreed that academic counseling adequacy improved after certification, only 31% and 27.4% agreed that counseling availability and adequacy for personal problems have improved, respectively. As for counseling confidentiality for personal problems, only 25.8% agreed that it has improved while 21.8% did not agree. About 41% agreed that counseling availability and adequacy for careers has improved while about one fifth disagreed. As for informative and educational activities that aimed at preventing student mistreatment, 40.3% agreed that this has improved and equal numbers (one third) disagreed or were unable to comment. A percentage of 44.8% agreed that appropriateness of student advancement and graduation policies have improved, whereas 35.6% agreed that appropriateness of policies and procedures for disciplinary action improved. Only 32.1% agreed that confidentiality of student records improved, while 53.7% were unable to comment. Around one third agreed that availability of student records for review and challenge improved, while 45.2% were unable to comment. Participants agreeing on improvement regarding diversity of the student body were 40.5% and almost half agreed that faculty diversity improved after certification. These generally indicates positive effect of accreditation with



Figure 2: Responses Percentages of Students for Student Support.

a room for modification. Another important aspect of student experiences is the learning environment.¹³ It includes physical settings comprising learning and social spaces on campus. Studies¹⁴ suggest that good learning environment is a major asset in students' learning. Results in Figure 3; Indicated that 56.3% of participants agreed that sufficiency of classrooms, labs and testing facilities has improved after certification; however, about one third disagreed. As for sufficiency of student study space 47.2% agreed that it improved. Only 27.2% agreed that sufficiency of student relaxation space improved while 58.1% disagreed. About half the participants (51.9%) agreed that adequacy of systems for personal safety and security improved. These results reflected the positive effect of certification process on the learning environment. Nowadays medical care is provided in electronic, web-networked evidence environment, with massive range of online information services. This suggests that students should be trained on how to use this information and find solutions for health care. Figure 3; B demonstrated that only 31.0% agreed that availability, quality of library services and availability together with adequacy of computer learning resources improved after certification; an equal percentage of 34.5% disagreed or were unable to comment. An even lower percentage (28.5%) agreed that adequacy of library holdings and instructional resources improved, while 36.3% disagreed. However, 51.9% agreed that efficiency of school web sites for learning improved after certification. The study findings are in agreement with that of Nina *et al.*¹⁵ Which further emphasized that not only providing resources is important but also guidance

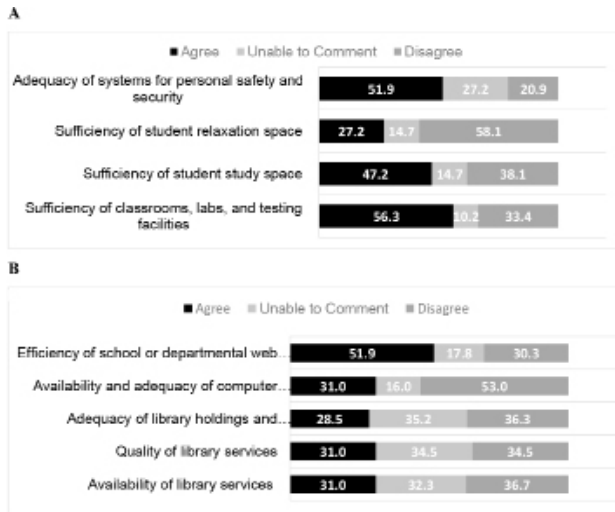


Figure 3: Responses Percentages of Students on Learning Environment B: Responses Percentages of Students on Experiential Training.

in using the library assets and services is necessary to help students meet the requirements. Without proper knowledge of accessing the information sources whether electronic or printed students are susceptible to overloaded and sometimes redundant information.

It is important to graduate well trained pharmacists who are able and ready to accept responsibility and accountability for drug therapy management. Figure 4; A revealed that more than half the participants (55%) agreed that presence of preceptors at experiential sites, responsible for coordinating students' activities, in addition to training them on the required competencies in the simulation pharmacy has improved after certification. Moreover, 62.8% participants agreed that there was an improvement in experiential activities to include at least two different types of contemporary pharmacy settings. Results are in agreement with that by Kerry *et al.*¹⁶ Which showed that faculty involvement and collaboration with pharmacists at practice sites is desired and should continue in upcoming years. Also the responses emphasized the importance of training at different settings, with community pharmacy being one of these sites since the majority of graduates will practice in this setting.¹⁷ This is in agreement with results of research done on student in South Korea which emphasized the importance of community pharmacy as a site of training.¹⁸ Results in Figure 4; B showed that around half of the participants (51%) agreed that quality of the educational program improved after certification and 27% disagreed. As for the quality of basic science and clinical instruction, 40.5% agreed that it was improved. The percentage of participants who agreed that appropriateness of teaching methods and

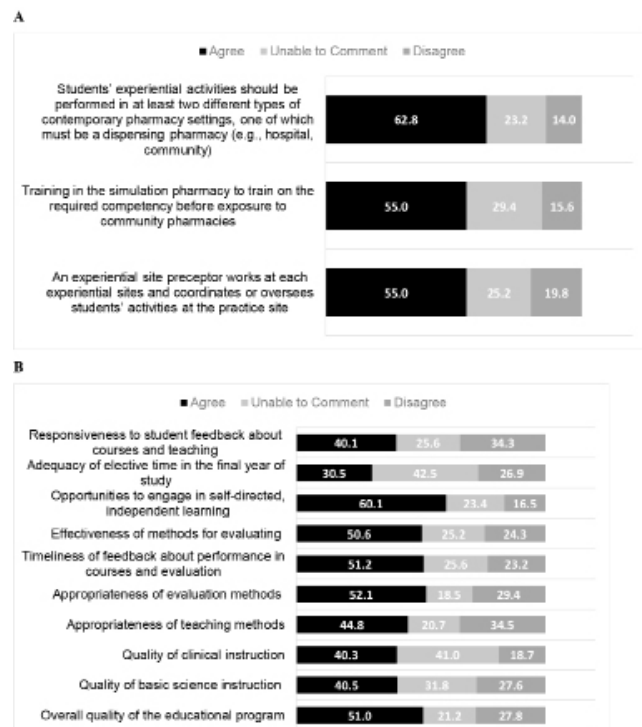


Figure 4: Responses Percentages of Students on Experiential Training B: Responses Percentages of Students on Educational Program as a Whole.

evaluation methods improved after certification was 44.8% and 52.1% respectively. Participants agreeing that timelines of feedback about performance in courses and evaluation had improved were 51.2%. Participants who agreed that effectiveness of methods for evaluating and opportunities to engage in self-directed, independent learning improved were 50.6% and 60.1% respectively. However, a lower percentage of participants agreed that adequacy of elective time in the final year of study improved after certification (30.5%). Additionally, participants who agreed that responsiveness to student feedback about courses and teaching improved after certification were 40.1%. It seems that students favor modernization of the curriculum and making it more oriented towards pharmacy practice and clinical pharmacy, this is in agreement with a study by El-Sayed *et al.*¹⁹ Which showed that students were aware of changes within the profession of pharmacy and were eager to see changes within their own country. As for teaching methodology, again there was agreement between our finding and that of El-Sayed *et al.*¹⁹ Where aspects of current teaching methodology were still valued by some students although more improvement is needed in this area. Thus curriculum development should be evolutionary rather than revolutionary and modern teaching methods should always be introduced alongside, rather than replace, effective traditional methods.^{20,21} A

lower percentage of participants agreed that certification improves responsiveness to student feedback about courses and teaching. These findings suggest that schools should work more on the improvement of time management and transparency with regard to student feedback about courses and teaching.

In general, it seems that students in all year's showed some degree of satisfaction with most criteria. However, some criteria revealed that new graduates and students in their senior years (22-23 years old) are less satisfied than those in 3rd and 4th years (20-21 years old). Perhaps because senior students would have had a greater proportion of their years of study in the program that were not positively influenced by certification. Also they were more exposed to training and job market thus they were able to see the gaps between practice and what they have been taught. Results in Table 1 showed significant difference in administration awareness of student problems and the role of students on key committees in school of Pharmacy after certification with $p=0.001$ and <0.0001 respectively. Significance was also noticed in availability of tutorial help ($p=0.003$) as well as in counseling and improvement of policies / procedures for disciplinary and student's mistreatment ($p<0.001$). Significance was similarly observed in perception to improvement in experiential training ($p<0.001$) and in responsiveness to students' feedback about courses and teaching ($p=0.003$). Also in the effect of international accreditation on quality of clinical instruction ($p = 0.0001$), quality of basic science instruction ($p = 0.007$), academic counseling adequacy ($p = 0.007$; 0.006 respectively), counseling availability and adequacy for careers ($p = 0.0001$), appropriateness of policies and procedures for disciplinary action ($p = 0.001$) and in overall quality of the educational program ($p = 0.0001$). Comparing questionnaire results based on student major for all items presented in Figures 1-4 resulted in significant differences in the response to four questions as displayed in Table 2. There were no significant differences in the response of other questions. Around 46% of Pharm D student agreed that quality of clinical instructions improved after accreditation was significantly different from a percentage of 30% in BS students. The difference is expected because Pharm D students has more than one academic year of clinical training compared to 3 credit hours for BS students. Hence, the effect of accreditation on quality of clinical instructions is expected to be more pronounced by Pharm D students. The improvement in availability and quality of library services after accreditation was more pronounced by Pharm D students compared to BS student. Online library resources such as AccessPharmacy, UpToDate,

Lexicomp, and Pubmed are more commonly used by Pharm D students during their course work compared to BS student. Hence, it is expected for the Pharm D students to notice an improvement in library services compared to BS students.

The most important limitation of the present study is that the design of the questionnaire was driven by the ACPE guidelines. The present study did not address other international accreditation bodies such as the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) and Australian Pharmacy Council (APC).²² This limitation is attributed to the lack of data from Jordan regarding international accreditation programs other than the ACPE. Presently, pharmacy schools in Jordan has only applied to ACPE as an international accreditation organization. Nationally, the first pharmacy school in Jordan was accredited by the ACPE in 2016. Currently, there are 5 pharmacy schools accredited by the ACPE in Jordan.²³ None of the Pharmacy schools in Jordan has applied to an international accreditation program other than the ACPE. Another limitation is the need to analyse data on the basis of class of students in course. In addition, it is recommended to include perception of alumni.

CONCLUSION

School of pharmacy students' agreed that certification process generally has been beneficial in terms of enhancing the overall program quality, quality of education, learning environment, program structure, support for students, as well as enhancing opportunities. It is important to recognize challenges facing graduates and adopt educational reform initiatives. The findings can be used to assist in formulating regulations and encourage emphasizing on students to ensure their trust in their schools and positive views of their careers. Bridging the gaps between School and stakeholders' expectations, and balancing theoretical and practical exposure within the curriculum is essential. The present manuscript gives a broad overview of six themes that includes: student-faculty-administration relationships, student support, learning environment and pedagogical methods, library and electronic learning resources, experiential training and the educational program as a whole. Future work concerns deeper analysis of each of the themes included presently.

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Table 1: Significant differences between students' perceptions towards the International Accreditation based on year in school.*

		Agree N	%	No opinion	%	Disagree N	%	Total	p value
Employers can trust that graduates of accredited programs are prepared to enter the workforce.	Fresh	28	53.8	13	25.0	11	21.2	52	0.001
	3& 4	102	49.3	40	19.3	65	31.4	207	
	5& 6	61	32.1	44	23.2	85	44.7	190	
Administration awareness of student problems improved after accreditation	Fresh	28	53.8	13	25.0	11	21.2	52	0.001
	3& 4%	102	49.3	40	19.3	65	31.4	207	
	5& 6%	61	32.1	44	23.2	85	44.7	190	
Availability of Tutorial help improved after accreditation	Fresh	30	57.7	6	11.5	16	30.8	52	0.003
	3& 4	117	56.5	35	16.9	55	26.6	207	
	5& 6	73	38.4	47	24.7	70	36.8	190	
Training in the simulation pharmacy to train on the required competency before exposure to community pharmacies	Fresh	36	69.2	11	21.2	5	9.6	52	0.001
	3& 4	104	50.2	78	37.7	25	12.1	207	
	5& 6	107	56.3	43	22.6	40	21.1	190	
Appropriateness of evaluation methods improved after accreditation	Fresh	38	73.1	4	7.7	10	19.2	52	0.006
	3& 4	109	52.7	43	20.8	55	26.6	207	
	5& 6	87	45.8	36	18.9	67	35.3	190	
Responsiveness to student feedback about courses and teaching improved after accreditation	Fresh	30	57.7	9	17.3	13	25.0	52	0.003
	3& 4	86	41.5	61	29.5	60	29.0	207	
	5& 6	64	33.7	45	23.7	81	42.6	190	
Role of students on key Committees in School of Pharmacy improved after accreditation	Fresh	32	61.5	8	15.4	12	23.1	52	0.0001
	3& 4	110	53.1	77	37.2	20	9.7	207	
	5& 6	66	34.7	77	40.5	47	24.7	190	
Overall quality of the educational program improved after accreditation	Fresh	33	63.5	7	13.5	12	23.1	52	0.003
	3& 4	118	57.0	44	21.3	45	21.7	207	
	5& 6	78	41.1	44	23.2	68	35.8	190	
Quality of basic science instruction improved after accreditation	Fresh	26	50.0	12	23.1	14	26.9	52	0.007
	3& 4	97	46.9	64	30.9	46	22.2	207	
	5& 6	59	31.1	67	35.3	64	33.7	190	
Quality of clinical instruction improved after accreditation	Fresh	33	63.5	8	15.4	11	21.2	52	0.000
	3& 4	71	34.3	117	56.5	19	9.2	207	
	5& 6	77	40.5	59	31.1	54	28.4	190	
Appropriateness of evaluation methods improved after accreditation	Fresh	38	73.1	4	7.7	10	19.2	52	0.006
	3& 4	109	52.7	43	20.8	55	26.6	207	
	5& 6	87	45.8	36	18.9	67	35.3	190	
Adequacy of elective time in the final year of study improved after accreditation	Fresh	21	40.4	11	21.2	20	38.5	52	0.000
	3& 4	59	28.5	115	55.6	33	15.9	207	
	5& 6	57	30.0	65	34.2	68	35.8	190	

*Fresh=fresh graduates;3&4=third and fourth year students; 5& 6=fifth and sixth year

Table 2: Questionnaire questions with significant differences between BSc in Pharmacy students and Pharm D students.

BSc in Pharmacy Pharm D		Student's major*		Total	p-value**	
		Count	% within Student's major			
Quality of clinical instruction improved after accreditation	1- Agree	Count	52 _a	129 _b	181	0.003
		% within Student's major	30.40%	46.40%	40.30%	
	2- No Opinion	Count	84 _a	100 _b	184	
		% within Student's major	49.10%	36.00%	41.00%	
	3- Disagree	Count	35 _a	49 _a	84	
		% within Student's major	20.50%	17.60%	18.70%	
Informative and educational activities aimed at preventing student mistreatment improved after accreditation	1- Agree	Count	70 _a	111 _a	181	0.011
		% within Student's major	40.90%	39.90%	40.30%	
	2- No Opinion	Count	62 _a	71 _b	133	
		% within Student's major	36.30%	25.50%	29.60%	
	3- Disagree	Count	39 _a	96 _b	135	
		% within Student's major	22.80%	34.50%	30.10%	
Availability of library services improved after accreditation	1- Agree	Count	42 _a	97 _b	139	0.016
		% within Student's major	24.60%	34.90%	31.00%	
	2- No Opinion	Count	53 _a	92 _a	145	
		% within Student's major	31.00%	33.10%	32.30%	
	3- Disagree	Count	76 _a	89 _b	165	
		% within Student's major	44.40%	32.00%	36.70%	
Quality of library services improved after accreditation	1- Agree	Count	39 _a	100 _b	139	0.013
		% within Student's major	22.80%	36.00%	31.00%	
	2- No Opinion	Count	65 _a	90 _a	155	
		% within Student's major	38.00%	32.40%	34.50%	
	3- Disagree	Count	67 _a	88 _a	155	
		% within Student's major	39.20%	31.70%	34.50%	

*Each subscript letter denotes a subset of Student's major categories whose column proportions do not differ significantly from each other at the .05 level.

**P-value was calculated using Chi-square test

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

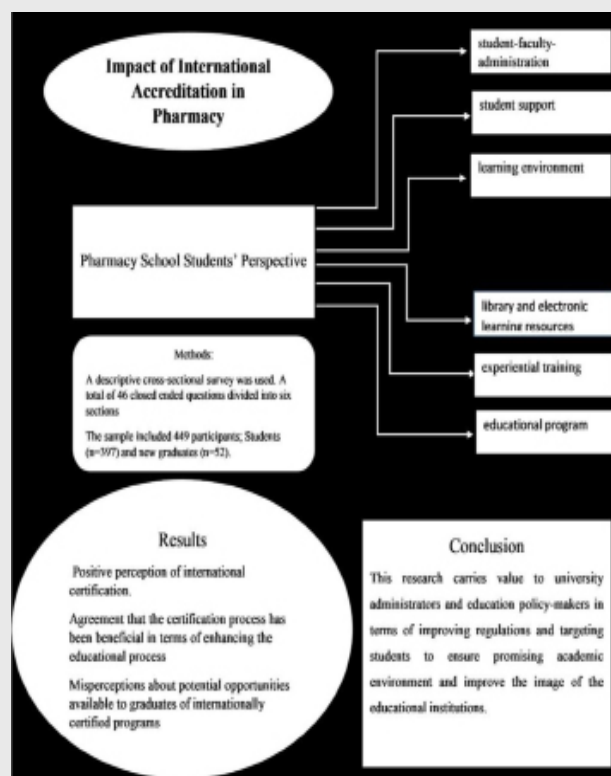
ACPE: Accreditation Council for pharmacy Education; **ISP:** Is International Services Program **BS:** Bachelor of Pharmacy, **Pharm D:** Doctor of Pharmacy; **SPSS:** Statistical Package for the Social Sciences; **CPD:** continuing professional development.

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About Authors



Prof. Rula M Darwish, BSc Hon., PhD, Kings'College, London, Professor in Pharmaceutical Microbiology, Former Dean of School of Pharmacy /The University of Jordan Accreditation Council for Pharmacy Education (ACPE), Advisory Group (ISPAG), Executive Committee in the Academic Section of the International Pharmaceutical Federation (FIP), The University of Jordan Queen Rania St. Amman 11942, Amman – Jordan.

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