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Satisfaction of Allied Health Students with the ExistingPreceptorship-basedClinical Training in Bahrain

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Abstract
Introduction:*Clinical training through preceptors is the backbone that benefits the preceptee's and healthcare institutions, and ensures confident and competent healthcare professionals who will provide quality care to their patients. The objectives were to assess the Allied Health (AH) students satisfaction with clinical training through preceptors and identify the barriers in order to enhance preceptors' performance.*
Methods: *A cross-sectional study was carried out among the AH students (n=290), College of Health and Sport Sciences, University of Bahrain. Data were collected using satisfaction of allied health students with preceptorship-based clinical training questionnaire.*
Results:*Only 26.9% of students agreed that the current preceptors have special clinical learning plan to achieve the learning outcomes. Approximately half of students (45.5%) disagreed that clinical preceptors provided them with the opportunities of hands on training to practice or facilitated their engagement in clinical practice. 52.1% of students disagreed that the preceptor delivered verbal effective feedback on a timely manner during their clinical learning. Themajority of the students were dissatisfied with the current preceptorship (81%).*
Conclusion:*AH students were dissatisfied with the existing preceptorship system and the preceptors effective feedback was considered the most dissatisfied aspect. Refining the existing preceptorship system through the preceptorship educational program can equip the AH programs with effective pedagogical techniques,quality improvement in higher education, benchmarking, and accreditation. Further studies are required that are discipline specific in AH.*
Key Words: *Allied Health, Preceptorship- based clinical training, , Students' satisfaction, Bahrain*

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I. Introduction

The success of a health science educational programs requiremonitoring the effectiveness of the educational methodologies includingthe clinical trainingstrategiesto meet the needs oftoday's complex healthcare services (Capital Nurse, 2017). Preceptor based clinical training (PCL) benefits the preceptee's and healthcare institutions (Matua et al., 2014),that ensures confident and competent healthcare professionals (Lockwood-Rayermann, 2003).This involves one or more periods of practicum in a clinical setting subsequent to class room didactic education.The students observe, practice, and hone hands-on technical, problem-solving and interpersonal skills in an authentic clinical setting with a clinician. Further, it prepares students for professional certification examinations thatserve as the validation of competencies to embark their professional career.

Allied Health (AH) professionals comprise the majority of the healthcare workforce and an estimate suggests that as much as 60% of the healthcare workforce may be classified as AH (Institute of Medicine, Committee on Quality of Healthcare in America, 2001, Advancing the allied health workforce in California, 2019). The list of distinct occupations included in AH exceeds 85 and varies from country to country. The recent data from the Ministry of Health, Kingdom of Bahrain indicate that pharmacists and technicians comprise 5.4 per 10000 population (Ministry of Health, Kingdom of Bahrain, 2019). AH professionals are expected to collaborate with physicians and othermembers of the healthcare team to deliver high-quality patient careservices for prevention, diagnosis and treatment of diseases, disabilities, and disorders, and also contribute to healthcare research(Srinivasan, 2011).

The College of Health and Sport Sciences (CHSS) was established in 1976 by the Ministry of Health(MoH),Kingdom of Bahrain in collaboration with reputed universities of health sciences. In the early

stages, the CHSS offered Associate Degree (AD) programs in nursing and a number of AH professions.Following a royal decree in 2011, CHSSwas merged with the University of Bahrain(UoB).In 2015, the AH programs were upgraded to the B.Sc. degree in Pharmacy, Medical Laboratory Sciences (MLS) and Radiologic Diagnostic Technology (RDT) with an exception of the Dental Hygiene (DH) program.The students of AH programs begin their clinical training in the second year and cap it with the internship.Briefly, the students in the pharmacy program take 4 clinical courses of 20 credits spread across 4 semesters; MLS students take 4 clinical courses of17 creditsin 4 semesters; RDT students take 5 clinical courses of 27 creditsin 5 semesters; PT students take 9 clinical courses of 26 creditsin5 semesters,and the DH students of AD begin their clinical training in the first year and take 6 clinical courses of 17 credits in 5 semesters. Currently, the clinical preceptors are experienced AH employees at the various clinical sites in Bahrain who lack formal clinical preceptor training.

To improve the quality in higher education, particularly at a time when the AH programs have been upgraded from AD to B.Sc. degrees, assessing the perception of the AH students and quality of PCL was felt necessary. Therefore, our objectives were to:i) assess the AH students satisfaction of PCL and ii) identify the barriers to enhance systematised clinical training.

II. Methods

Study Design,subjects and Setting

A cross sectional descriptive research design wasused. Aconvenience sampling of all students who were in thepre-final and final yearand enrolled in thePharmacy, DH, MLS, PT and RDTprograms (n=290) comprised the study subjects. The study was conducted at CHSS, UoB, Kingdom of Bahrain. data were collected during the latter half of 2019.

Ethical Consideration

This study had the ethical approval of the CHSS research and ethics committee (CHSS SRC ID: 16/2018-19).Written informed consent was obtained from the participants after explaining the objectives of the study, without coercion, emphasizing their right to refuse to participate in the study or to withdraw at any time. Confidentiality of the collected data and anonymity were also maintained.

Measurement

Satisfaction of Allied Health Students with Preceptorship – based Clinical training Questionnaire was used to collect data.This tool was developed by the researchers after thorough review of related literature to assess satisfaction of allied health students with the existing preceptorship in clinical learning. The content validity was tested through five experts and amended based on their suggestions. The survey was piloted on 30 students (10%) to test the feasibility, applicability, clarity and refinement. The survey tool contained two sections. Section A contained socio-demographics and academic characteristics of the participating student. Section B comprised the 15-item student evaluation checklist of the preceptors' performance in AH clinical setting on the 3-point Likert scale (3= Agree, 2=Neutral, 1= Disagree). An Arabic translation was supplemented for each of the items for a better comprehension. The obtained total score was transformed to percent score and it classified as follows: Satisfactory (70% and more) and unsatisfactory (less than 70%)

Statistical analysis

The survey tool had a validity of 97% and found reliable when tested by measuring the internal consistency of its items using the cronbach alpha coefficient($r = 0.86$).

The data were cleaned, coded and entered IBM SPSS ver. 21.0 (IBM Corp., Armonk, NY, USA) for descriptive and inferential statistical analysis. Twenty percent of the survey was randomly selected for a quality control check. The Kolmogorov – Smirnov test was used to examine the normality of the data distribution. One sample t-test was used to test the significance ofeach of the items of the survey check listusing thecumulative scores of all students under the categories of agree,neutral and disagree. Mean was used to measure the central tendency in statistical tests of significance.

The mean score of students' satisfactionswas estimatedby cumulating the scores of the15 items on the checklist using the maximum possible score of 45 (15x3) that is expressed as a percentage. For an illustration, the following formula is provided:

$$\textit{Mean Score} = \frac{\textit{Cumulative score obtained } X\ 100}{15^{a}\ X\ 3^{b}}$$

[a]15= number of items in the questionnaire

[b]3 = maximum possible score for each item

To better understand how students of different programs and year of study had responded to the items on the checklist, a comparison between thepercent scores and the type of program and year of study was carried out using the Chi-Square Test (X^2). The Kruskal-Wallis chi-square testwas used to compare the difference between level of students' satisfaction among different programs. The Wilcoxon signed rank test was used to compare the difference in satisfactory and unsatisfactory scores between pre-final and final year respondents.

III. Results

Participants' demographic characteristics

The results are reported for 290 students enrolled in the study.Table 1 lists the sociodemographic and academic characteristics of the AH students. Half of the students were 20 years old and 37% were 21 years old with a mean age of 20.6 ± 0.8 years.AH students were predominantly female (87%), single (92%), Bahraini (96%) and sponsored (76%).More than one third of the students (35 %) were in the pharmacy program, and more than a quarter of them were studying either MLS or RDT (29% and 28 % respectively). In terms of the year of study, three quarters of the students (75%) were in their pre-final year,and a quarter of themin their final year. On the self-reported cumulative grade point average (CGPA) on a 4 point scale, 38 % of the students had CGPA from 3.0- 3.49, while, one fifth had CGPA above 3.5 with a mean of 3.10 ±0.44.

Table 1: Students' sociodemographic and academic characteristics.

Items	**n =290**	**%**
A. Students' Sociodemographic Charcterstics. Age:		
▪ 19	11	3.8
▪ 20	143	49.3
▪ 21	108	37.2
▪ 22	25	8.6
▪ 23& more	3	0.9
Min-Max	19-26	
Mean±SD	20.6 ± 0.814	
Gender:		
▪ Male	37	12.8
▪ Female	253	87.2
Nationality		
▪ Bahraini	278	95.9
▪ Non- Bahraini	12	4.1
B. Students' Academic Characteristics. Program of Study		
▪ Dental Hygiene (DH)	10	3.4
▪ Medical Laboratory Sciences (MLS)	83	28.6
▪ Pharmacy	101	34.8
▪ Physiotherapy (PT)	16	5.5
▪ Radiologic Diagnostic Technology (RDT)	80	27.6
Year of entry at CHS		
▪ 2014	3	1.0
▪ 2015	101	34.8
▪ 2016	186	64.1
Year of Study at CHS		
▪ Third Year	216	74.5
▪ Fourth Year	74	25.5
Financial support for study		
▪ Self supported	70	24.1
▪ Scholarship through sponsor	220	75.9
CGPA (n=259)		
▪ Less than 2	2	0.7
▪ 2-2.49	24	8.3
▪ 2.5-2.99	66	22.8
▪ 3.0-3.49	109	37.6
▪ 3.5 & more	58	20.0
Min-Max	1.98-3.97	
Mean±SD	3.10 ±0.44	

Table 2 shows the Response of AH students withPCL. In the item analysis ofthe 15 items on the checklist, the cumulative scores of all students under the categories of agree,neutral and disagree were significant. It is observed that 40.7% of the students disagreed that they wereassigned to a specified preceptor at every clinical allocation who is responsible for facilitating and supervising my clinical learning. Only one quarter of the allied health students agreed that they and the preceptor had special clinical learning plan to achieve the learning outcomes and nearly one half of them had neutral response regarding this issue. Similarly, only 30.7% of the students agreed that the preceptor designed educational goals to meet their learning needs.

Concerning the educational methods and learning styles, only one quarter of the student agreed that the preceptor used various teaching strategies and coordinated various learning styles to achieve their clinical learning outcomes (24.1% and 25.9% respectively). Moreover, approximately half of the students agreed that the preceptor provided them with the opportunity of hands on training to practice clinical learning all the time (44.5%) or facilitated their engagement in clinical practice(45.5%). Additionally, only 15.5% of them agreed that the preceptor maintained a good rapport with them in a professional clinical learning environment while 55.5% of the students had neutral response.

The same table also revealed that more than half of the students disagreed that the precepor delivered verbal effective feedback on a timely manner during their clinical learning (52.1%) as well as 42.8% of them disagreed that their clinical learning experience was measured along with a protected clinical time in every posting. Similarly, 41.0% of the allied health students disagreed that the preceptor took active steps with them in completing their clinical log book and only 19.3% of them agreed that the preceptor provided them with formal evaluation.

As fore the role of the academic faculty in the clinical learning of the allied health students, the table highlighted that more than one third of the students (36.2%) disagreed that they and the preceptor were always supported by an academic faculty to achieve my learning needs and 44.8% of them also disagreed that they and the preceptor could easily access the academic faculty to solve my clinical learning problems when arise.

Table 2: Allied health Students response with preceptorship-based clinical learning

Sl.No	Indicators	Student's Response (n =290)					
		Agree		Neutral		Disagree	
		No.	%	No.	%	No.	%
1	I am assigned to a specified preceptor at every clinical allocation who is responsible for facilitating and supervising my clinical learning	64	22.1	108	37.2	118	40.7
2	The preceptor and I have special clinical learning plan to achieve the learning outcomes	78	26.9	129	44.5	83	28.6
3	The preceptor designs educational goals to meet my learning needs	89	30.7	113	39.0	88	30.3
4	The preceptor uses various teaching strategies to achieve my clinical learning outcomes	70	24.1	133	45.9	87	30.0
5	The preceptor identifies and coordinates various learning styles	75	25.9	118	40.7	97	33.4
6	The preceptor provides me with the opportunity of hands on training to practice my clinical learning all the time	49	16.9	112	38.6	129	44.5
7	The preceptor facilitates my engagement in clinical practice	51	17.6	107	36.9	132	45.5
8	The preceptor maintains a good rapport with me in a professional clinical learning environment	45	15.5	161	55.5	84	29.0
9	The preceptor creates and delivers verbal effective feedback in a timely manner	36	12.4	103	35.5	151	52.1
10	My clinical learning experience is measured along with a protected clinical time in every posting	59	20.3	107	36.9	124	42.8
11	The preceptor assists me in maintaining my clinical portfolio	57	19.7	136	46.9	97	33.4
12	The preceptor takes active steps with me in completing my clinical log book	62	21.4	109	37.6	119	41.0
13	The preceptor provides me with a formal evaluation	56	19.3	116	40.0	118	40.7
14	The preceptor and I are always supported by an academic faculty to achieve my learning needs	54	18.6	131	45.2	105	36.2
15	The preceptor and I can easily access the academic faculty to solve my clinical learning problems when arise	52	17.9	108	37.2	130	44.8

Total percent score of satisfaction among allied health students with preceptorship in clinical learning is described in Figure 1. It is obvious that most of the students were not satisfied of the preceptorship in the clinical learning (81.0%).

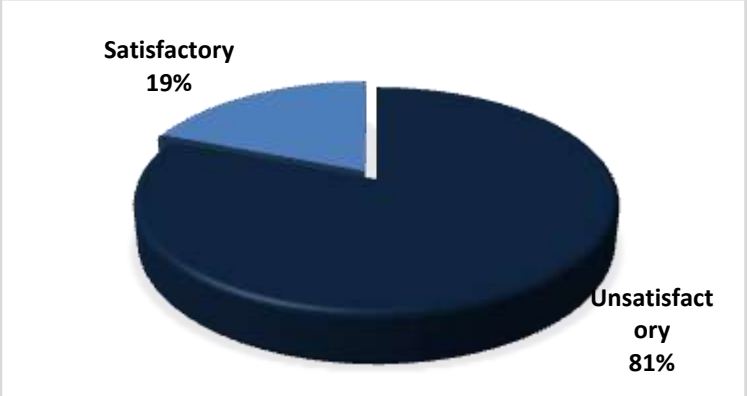

Figure 1: Total Percent Scores of Satisfaction among Allied Health Students With Preceptorship In Clinical Learning

The relationship between program of study and the total percentage scores of satisfaction of AH students with PCL are presented in Table 3. Overall, the total percent scores of AH students with PCL revealed that the majority of the students were not satisfied (81%; range: 31.3% - 93.8%; p= 0.014) withthe mean percent score being 57.23 ±14.9, irrespective of the program or year of study . There were significant differences in mean percent scores between program of study (p= 0.002).All students of the DH were found to be dissatisfied with the preceptorship, while the majority of the students of pharmacy and PT programs were also dissatisfied. On the other hand, only 23% (highest percentage) of MLS students were satisfied with PCL.

Table 3: Relationship between program of study and the total percent scores of satisfactory and unsatisfactory responses of allied health students with preceptorship based clinical learning

Total percent scores	Program of Study										Significance
	Dental Hygiene (n= 10)		Lab (n=83)		Pharmacology (n=101)		Physiotherapy (n=16)		Radiology (n=80)		
	N	%	N	%	N	%	N	%	N	%	
Unsatisfactory (less than75%)	10	100.0%	60	72.3%	89	88.1%	14	87.5%	62	77.5%	X^2=10.85 **P=0.028***
Satisfactory (75% and more)	0	0.0%	23	27.7%	12	11.9%	2	12.5%	18	22.5%	
Min-Max	42.20-66.70		31.3-93.8		31.3-93.8		42.2-85.4		31.3-83.3		**kw–χ^2**=16.93 **P= 0.002****
Mean±SD	54.3±6.48		61.12±1.68		52.70±1.46		55.5±1.23		59.6±1.29		

χ^2: Chi-Square Test * Significance at *p≤0.05
Kw χ^2: Kruskal-Wallis Chi-Square Test ** Significance at ***p≤0.01

Table 4 demonstrates the relationship between the year of study and the total percentage scores of satisfaction of AH students with PCL. The mean percentage score of satisfaction was 51.86±10.46 and was lower than the unsatisfactory mean percentage scores of 80.13±7.56 (p=0.001). However, the satisfactory and unsatisfactory total scores didn't vary greatly between pre-final or final year of study.

Table 4: Relationship between the year of study and the total percentage scores of satisfactionof allied health students with preceptorship based clinical learning

Total percent scores	Year of study				Significance
	Third Year (n= 216)		Fourth Year (n= 73)		
	N	%	N	%	
Unsatisfactory(less than 70%)	171	79.2%	64	86.5%	X^2=1.92 P = 0.166
Satisfactory(70% and more)	45	20.8%	10	13.5%	
Min-Max	31.3-93.80		31.30-93.8		**wil$Z$**=-14.76 **P= 0.000***
Mean±SD	57.28±1.55		57.07±1.30		

χ2: Chi-Square Test *wil$Z$: Wilcoxon Signed Ranks Test* ** Significance at *p≤0.01*

Some of the students' views of the preceptors were reproduced verbatim and unedited, and are as follows: 'i have more than one during the same day'; 'the contact number of the doctors were not given at all; i don't have a specific preceptor; they put me with the available preceptor; we are not allowed to do many skills, and the preceptor was available for outpatient only and not for an inpatient.'

IV. Discussion

Successful clinical training for the students depends on having a defined list of competencies, target performance expectations(Srinivasan, 2011, Görlitz, et al., 2015)with anappropriate clinical preceptor(Biagioli & Chappelle, 2010).The major benefits of clinical training are often overlooked or minimized because they are not measured. Whereas, the quality improvement in health professions education requires an assessment of the clinical preceptors and the system, and that remains a significant challenge(Hatemet al., 2006, Steinert, et al., 2006).

As a continuum of quality improvement in higher education, particularly at a time when the AH programs were upgraded to B.Sc. degrees, a needs assessment informed by the expected competencies, learning outcomes, and observable professional behaviours wererequired.In this context, this study was initiated to assess AH students' satisfaction of preceptor based clinical training, identify the barriers in the process of clinical training, and develop a preceptorship system at CHSS.

Obtaining the consensus of five experts on the content validity of the survey tool was encouraging as the validity was 97% and reliability was 86%.

There is a considerable demand for B.Sc. programs in AH and in specific disciplines i.e: over one third of the students (35 %) in this study were in the pharmacy program. Three quarters of the students (75%) were in the pre-final year showing a marked rise in the acceptance of students in the AH programs mirroring the demand for AH programs as compared to the first cohort of intake studying their final year, and the trend for demand is increasing. The academic performance of AH students was high as reflected through their self-reported CGPA on a four point scale; 38 % of the students had CGPA ranging from 3.0- 3.49 while, one fifth of them had a CGPA above 3.5 with a mean CGPA of 3.10 ±0.44 (Table 1). Therefore, it is to be expectedthatAH students demand a quality preceptor to facilitateclinical training. However, their unsatisfactory responses reflected through their mean percentage scores conveyed that their expectations were not met.

The item "preceptor creates and delivers verbal effective feedback in a timely manner" had the lowest percentage of responsesto agreement and the highest percentage of responses to disagreement by the AH students (Table 2). Effective feedback has beendescribed as the cornerstone of effective practice in education(Cantillon, et al., 2008).Wilkinson et al, have emphasised that providing effective feedback is a core function of precepting and a critical step in the learning process as well as the most essential skill for preceptors(Wilkinson, et al., 2013,). Moreover, an effective process of feedback delivered to the clinical students through observations and judgementsby the preceptor creates an atmosphere of trust that includes the dimensions of the organization, interaction, impact, and depth(Fryeet al., 1996, Kogan, et al. , 2012).Through data analysis, we found that RDT had poor cumulative percentage scores foragreement for 8 of the itemsdisagreement for 7 items. The students in the RDT program have 5 clinical courses of 27 credits– the highest among the AH programs interms of credit hours. RDT program is unique in thattheir daily workcentres on workstation imaging with limited patient contact, precluding the application of patient-centred clinical teaching(Tan, et al., 2018).Assigning patients to RDT students on diagnostic radiology courses is an effective and practical way to train imaging appropriateness and improve clinical training(Sheng, et al., 2019).Inaddition, the more sophisticated imaging facilities such as computed tomography and magnetic resonance imaging are not available at all clinical training sites in Bahrain.

The mean item percentage scores were categorized as "satisfactory" if the scores were 70% or more to match with the minimum required to pass a professional course in the AH program and "unsatisfactory" as less than 70%. Overall, the AH students were not satisfied (81%) with the preceptorship in clinical learning irrespective of the program or year of study. On comparing the total percent scores of satisfaction of AH students with preceptorship in clinical learning (Table 3), significant differences were found on mean percentage scores between programs of study (p= 0.002). The DH students were dissatisfied with the preceptorship. The majority of the students of pharmacy and PT programs were also not satisfied, while,only a quarter of the MLS students were satisfied with preceptorship in their clinical learning. Our study results were aligned withva study reported from a dietetics education program which concluded that teaching ability had the largest difference in mean scores between an effective and ineffective preceptorship(Sarcona, et al., 2015). Ford et al, have reported that students were challenged and disappointed when their clinical supervisors were either disinterested or under prepared in their clinical teaching(O'Brien, et al.,2019).Direct experience of AH students' satisfaction on clinical preceptorship requires careful educational preparation, structuring and adequate support for both the student undergoing the practice event and for the clinical supervisor stewarding the AH students . Therefore, a

prospective plan to ensure a positive and rewarding experience is required and is worthy of deeper consideration when providing a preceptor based clinical experience(Ford, et al., 2016).

Further, there were distinct differences (Table 4) in satisfactory and unsatisfactory scores when tabulated by the year of study($p=0.001$), however, the mean scores didn't vary greatly between either pre-final or final year of study. It is worth noting that our students' remarks were mostly directed towards deficiencies in the role of preceptors.

Strengths and Limitations

This study has explored AH students'experience of and satisfaction with clinical training in Bahrain and it offers insight to the existing preceptor programme in AH and the critical elements in preceptorship that need to be inplace for quality in education. However, the list of items in the common survey tool in Table 2 on the satisfaction of AH students with preceptorship in clinical learning is not without its limitations: i. it has allowed students across diverse AH professions to examine a wide range of preceptor-to-student communication variables and ii. students were asked to complete the survey retrospectively.

V. Conclusions

This study is the first of its kind in the Kingdom of Bahrain exploring AH students' satisfaction with clinical training. Notably, our findings revealed that most of the AH students were dissatisfied with the existing preceptorship system of clinical training and the preceptors' effective feedback in a timely manner was considered as the most important aspect of clinical training. This study presents an opportunity for refining the existing clinical training program at CHSSthat can equip the AH programs with effective pedagogical techniques for a new generation of students enrolled for B.Sc. degree. The possible reasons for developing a systematised preceptorship training program could bematched with a realist evaluation(Hugo & Botma ,2019)on circumventing the prevailing assumptions that anybody can assume the role of a preceptor; expertise andexperience are not mandatory for accompanying students in the clinical area. Moreover, amismatch of curriculum, content, clinical placements, the expertise andfunctions of preceptors, theory–practice gaps, and theself functioning of the preceptors deviating from the goals of the educational and healthcare system needs immediate attention. Overall, this study recommends establishing a systematisedpreceptorship training program for the AH programs as a quality improvement in higher education, benchmarking to International standards, and for accreditation purposes of the B.Sc. programs of AH. In addition, it is suggested to carry out further studies to gain further insights into the preceptorship system that are discipline specific in AH.

Coflect of Interest

The authors declare that they have no conflict of interest.

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