

## RESEARCH ARTICLE

## Evaluation of Virtual Nutrition Counseling as a Nutrition Care and Educational Tool

Rubina Hakeem<sup>1</sup>, Nida Azhar<sup>2</sup>, Musarrat Jahan<sup>3\*</sup>

<sup>1,2,3,4,5</sup>Department of Human Nutrition & Dietetics, Ziauddin University, Karachi, Pakistan

### ARTICLE INFO

Received: April 28, 2022

Accepted: June 15, 2022

### Keywords

Acidophile

Actinobacteria

Multi-drug resistance

Antibacterial activity

Cytotoxicity

### \*Corresponding Author:

musarrat.jahan@zu.edu.

pk

### ABSTRACT

Structured Supervised Practice (SSP) is an essential component of the undergraduate BS degree program in Human Nutrition and Dietetics because it develops core competencies in entry level dietitians in clinical settings. During Covid-19 pandemic, the Rana Liaquat Ali Khan College of Home Economics (RLAK CHE), Karachi-Pakistan offered virtual internships to the dietetics internes to provide training under the supervision of experienced Dietitians and also save the timeline of their degree program. This study aims to assess the usefulness of virtual clinics in providing understanding of nutrition counselling process to the dietetic internes. Net Promoter Score (NPS) was used to assess the students' acceptability and overall satisfaction levels of students, Dietitians and clients with these virtual clinics. A total of 37 students participated in this internship program. The results of this study showed that acceptability of the program among students is highly favorable (NPS score=42.9). The students were highly satisfied with the various aspects of virtual clinic program as indicated by the NPS (46.5-75.0). Dietitians were also very satisfied (NPS= 53.85-76.92) with this program and its different aspects including trainees' responsiveness (SS=76.92), their patients counselling abilities (SS=69.23) and smoothness of the sessions but their satisfaction level was low in sharing their diet plans through screen shares (46.7). The clients' satisfaction level scored extremely satisfied (65.4-96.2). Our results also revealed the usefulness of these clinics to the students after one year of completion when they employed as nutritionist and dietitian in clinics. It was concluded from this study that these virtual nutrition clinic acts as a useful tool not only for educational purpose for students but also for clients to receive nutritional counseling in various circumstances where physical visit is a problem.

### INTRODUCTION

Supervised practice also known as internship is an integral part of training dietitians. Dietetic interns can achieve their core competencies, an

essential requisite for entry-level dietitians through these Supervised Practice Programs (SPP) that aims to nurture the experiential learning opportunities in them (Combs and Schwartz, 2020). These internship programs provided the dietetic interns

with hands-on training opportunities that links their theoretical knowledge into practical learning (Combs and Schwartz, 2020). Students are required to pass a registration examination after prosperous accomplishment of their SPP to get a license for practice as Registered Dietitians (RD) (Bawadi et al., 2019) which provide students with opportunities to practice in various platforms including hospitals, food service departments, sports facilities, food industries and other areas of public health (ACEND, 2019).

The RLAK CHE Dietetics Internship aims to provide competencies in nutrition care in a variety of health care settings. The course director communicates with the health care facilities where interns could be placed. An internship detailing the standards of internship is shared with the health care facility and if the relevant preceptor agrees to provide required experiences student are assigned for internship. The standards of dietetic internships were prepared by the author when she worked as head of the institution at RLAK CHE and approved by other dietetics faculty and are in use since 2010. The standards specify a list of competencies to be achieved and list was guided by ACEND (2019) standards for international dietitians. The impact of COVID-19 pandemic has posed an obstruction in these supervised practice programs in nearly all healthcare fields including nutrition & dietetics (Ajmal et al., 2016; Martin et al., 2022). Preventive measures of COVID-19 including lock down and social distancing interrupt the students learning skills at all educational levels (Tarkar, 2020). New approaches were required at that time to substitute the SPP at clinical or other industrial settings to develop required competencies in interns and to secure graduation timeline. Implementation of virtual supervised practice as an alternative platform for dietetic interns to develop required core competencies was started on the decision of the United States Department of Education (USDE) (Roper, 2022).

A study based on the simulations activities had shown a positive effect on students' perception of competencies development and may be considered as an andragogical tool of choice to support preparing future dietitians for entry to practice (Rosa and Giroux, 2022). Due to paucity of opportunities for dietetic internships during the Pandemic the Nutrition

Foundation of Pakistan designed an "Online Clinic" project to provide the students with some of the required competencies. The main objectives of this study was to determine the acceptability and usefulness of virtual clinics as an educational tool for dietetic students and to assess the satisfaction levels of the clients with these virtual clinics as a replacement of conventional nutrition care settings.

## **MATERIALS AND METHODS**

### **Participants**

A total of 37 female students divided into 6 groups participated in this study. The study participants were the final year students of BS HND RLAKCHE, Karachi-Pakistan who offered this opportunity of learning.

### **Virtual platform**

The virtual platform used for conducting clinics was Zoom. The "Record" feature of zoom was also utilized to record all the clinic sessions.

### **Clinic sessions**

A few ex-students of RLAK CHE, Karachi-Pakistan who had more than five-year experience of working as dietitians were informed about the project and were requested to run the clinic. One dietitian residing and registered in Canada (Naseem. Z (2020; personal communication), and two from Karachi (Sheikh. H and Rashid. T., 2020; personal communication,) served as Clinic Dietitians.

Family members and friends of RLAK CHE, Karachi Pakistan students were offered to use this service free of cost. Students took the clients details and anthropometric measurement before the clinic and shared the same with the dietitian. Clients were required to sign a consent form that include their permission to record the clinic audio and video.

In each zoom clinic video session up to four students were included as observers. Sessions were recorded and students were required to take notes and fill the Nutrition Care process form for the clients they observed. Course in-charge evaluated students' notes. Students and course in-charge could communicate with the dietitian about the case if required. Clients were also invited for follow up sessions. Students, clients, and dietitians provided feedback about satisfaction level with various aspects of the project on researcher prepared feedback forms.

**Measurement of acceptability and satisfaction**

This study utilized Net Promoter Score® or NPS® as a metric to measure the acceptability of these virtual clinics. NPS was initially used to measure customer experience and to predict business growth but the use of this score is increasing among teaching and learning domains to estimate the acceptability of educational activities and programs. NPS uses a 0-10 scale where 10 is the most favorable response, and categories respondents as Promoters (score 9-10); Passives (score 7-8) and Detractors (score 0-6) (Korneta, 2018).

Subtracting the percentage of Detractors from the percentage of Promoters yields the Net Promoter Score, which can range from a low of -100 (if every customer is a Detractor) to a high of 100 (if every customer is a Promoter). The results of the calculation were based on the suggested scores by Creators of NPS®, Bain & Company, i.e., >0 considered as is good, >20 as favorable, > 50 as excellent and >80 as world class.

Acceptability and perceived usefulness of learning activity was assessed by calculating satisfaction Score. Based on the principal of NPS scores, satisfaction score was calculated by subtracting the proportion of “somewhat agree” from the percentage of “strongly agree”. On a scale of 0 to 10 “Strongly agree” represented scores of 9 and 10, “Agree” represented scores of 7 and 8 and “somewhat agree” represented scores of 0 to 6.

**Data analysis**

Data thus collected was analyzed by IBM SPSS 20 statistical package. Qualitative variables including students’ program acceptability and satisfaction levels

of students, dietitians and clients were reported as frequency (%).

**RESULTS**

A total number of 37 female students participated in this project. Students were divided into 6 groups. Each group observed 3-5 counselling sessions.

**Overall acceptability of the program by the students**

Overall acceptability of the learning activity estimated by calculating the Net Promote Score was 42.9 that indicates highly favorable response (Fig. 1).



**Figure 1: Overall acceptability score of the program by students**

**Students’ satisfaction with virtual clinic**

Students’ satisfaction score ranged from 46.5 to 75 for various aspects of the virtual clinic (Table 1). Students were highly satisfied with the learning provided by the virtual clinic (SS=75). They were quite sure about knowledge level of senior dietitian (SS=66.7) their ability to apply learning (SS=60). A relatively lower satisfaction score (46.7) was observed in relation to notion that the style of the counselling was conducive to learning.

**Table 1: Students’ satisfaction with the virtual clinic**

Parameters	Students’ Satisfaction with Virtual Clinic			Satisfaction Score
	Strongly Agree %	Agree %	Somewhat Agree to Strongly Disagree %	
1. The virtual clinic offered information that was relevant.	81.3	12.5	6.3	75.0
2. I will be able to apply what I learned from this session to my work life.	66.7	26.7	6.7	60.0
3. The style of the counselling was conducive to learning.	53.3	40.0	6.7	46.7
4. The senior dietitian seemed knowledgeable about the topic.	73.3	20.0	6.7	66.7

The satisfaction assessment tool has power to predict Net promoter score. There was strong positive correlation between parameters 2 to 4 and likelihood of recommending the activity to others. There was not statistically significant difference in level of satisfaction of students from sessions conducted by different dietitians.

**Dietitians’ satisfaction with virtual clinic**

Dietitians’ satisfaction score ranged from 53.85 to 76.92 for various aspects of the virtual clinic (Table

2). Dietitians were very highly satisfied with the trainees’ responsiveness (SS=76.92). They were satisfied with their ability to counsel patient without any difficulty or interruption (SS=69.23) and also, to the smoothness of the sessions. A relatively lower satisfaction score (46.7) was observed in relation to dietitian’s satisfaction with sharing your diet plans through screen share.

**Table 2: Dietitians’ satisfaction with virtual clinic**

Parameters	Dietitians’ Satisfaction with Virtual Clinic			Satisfaction Score
	Strongly Agree %	Agree %	Somewhat Agree to Strongly Disagree %	
1. Able to counsel patient without any difficulty/interruption.	76.9	15.2	7.69	69.23
2. Complete information of client given before session.	69.2	20.3	7.69	61.54
3. Trainees were responsive.	84.6	10.2	7.69	76.92
4. Virtual Session were smooth.	76.9	7.7	15.38	61.54
5. Were you comfortable in sharing your knowledge virtually (diet plans through screenshare).	61.5	30.8	7.69	53.85

**Clients’ satisfaction with virtual clinic**

Clients’ satisfaction score ranged from 65.4 to 96.2 for various aspects of the virtual clinic (Table 3). Clients were extremely satisfied regarding the privacy (SS=96.2) and clarity of information given by the

dietitian (SS=84.7). They were highly satisfied with the process of registration, and response of dietitians to their queries (SS=76.9 each). They were also satisfied with the smoothness of the sessions (65.4).

**Table 3: Clients’ satisfaction with virtual clinic**

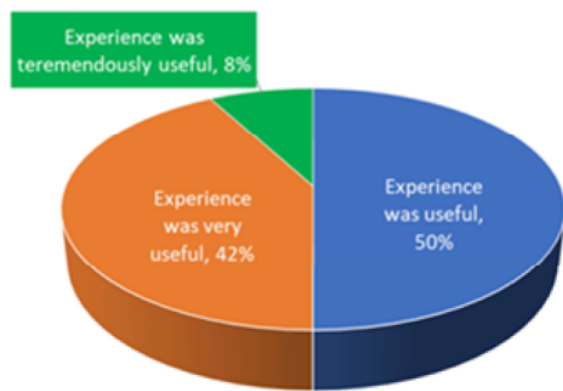
Parameters	Clients’ Satisfaction with Virtual Clinic			Satisfaction Score
	Strongly Agree %	Agree %	Somewhat Agree to Strongly Disagree %	
1. Were you comfortable regarding your privacy?	96.2	3.8	0.0	96.2
2. Information given by dietitian was clear.	88.5	11.5	3.8	84.7
3. Do you feel all your concerns and questions were adequately answered?	84.6	15.4	7.7	76.9
4. Registration done smoothly.	84.6	15.4	7.7	76.9
5. Session was smooth without any interruptions.	76.9	19.2	11.5	65.4

**Students’ satisfaction with virtual clinic usefulness and implementation after 18 months**

Students’ joined clinical setups after their completion of undergraduate degrees and their level of satisfaction regarding NFPVC implementation in their practice was explored. Majority (50%) of the respondents reported that experience of virtual clinics was useful in their clinical practice (Fig. 2). Also, students’ reported that NFPVC experience had been useful in communicating effectively with seniors in clinical practice (Usefulness Score=3.3) (Table 4).

**Table 4: Usefulness of components of activity in clinical practice**

Component	Usefulness Score
Taking Clients history	2.7
Observing senior dietitian's counselling	3.1
Filling the NCP documentation forms	1.9
Communication with senior dietitian	3.3
Senior Dietitian's feedback on my counselling	2.1



**Figure 2: Overall satisfaction virtual clinic usefulness and implementation after 18 months by students**

## DISCUSSION

The basic purpose of the present study was to explore the usefulness of virtual clinics for final year dietetic students as an alternative to physical internships required for the completion of their graduate degree program in Human Nutrition & Dietetics during the period of COVID-19 pandemic. Initially, transition from a traditional system to some advanced mode seems challenging but soon it was accepted. Before COVID-19, the implementation of virtual internships were uncommon (Hruska et al., 2022) but during the pandemic period various training programs had to be shifted from traditional physical styles to virtual set ups. So the students' acceptance of these dietetic virtual clinics as an alternate to physical internships in this study was assessed by Net Promoter Score and it provided a favorable response from their side i.e., 42.9. Evaluation of students' satisfaction score for different aspects of virtual clinic suggested that students were highly satisfied with their learning in these training sessions. They also reported to be satisfied with the knowledge level of senior dietitian. But they were less satisfied about the counseling style conducive to learning through virtual clinics and this is because of the fact that although virtual clinics provide an alternative platform to conventional training but it was less effective than face-to-face interaction as also reported by Shklarski and Abrams (2021). However, some studies concluded that supervised practice can only be beneficial when the supervision is provided and mentors are competent (Martin et al., 2021 and Rothwell et al., 2021), regardless of the mode of supervision in achievement of competencies. In this

study further investigation on the overall satisfaction of these students after a period of 1.5 years, following completion of their graduate program revealed that students found the experience of virtual clinics very useful in their clinical practices. Current study also supported the notion that qualified and skilled professionals are the main contributing factor to supervised students in their trainings.

Our results reported that dietitians were also highly satisfied with the trainees' responsiveness and their ability to counsel patients' effectively as well as smoothness of the session but relatively less satisfied regarding sharing the information virtually i.e., diet plans through screen share which may be due to lack of experience in using virtual platforms for training and teaching (Kaufman-Shriqui et al., 2021). Analysis of responses to the questions about the satisfaction of the clients for these clinics revealed that they were extremely satisfied regarding their privacy, clarity of information, and the process of registration.

These findings reflected the high acceptance of video consultations among clients and makes them an effective option for conventional physical consultations.

Results of the current study found consistent with the other studies showed clients/patients' satisfaction of virtual clinics in different medical and health disciplines during pandemic of COVID-19 (Byrne and Watkinson, 2021; Barkai et al., 2021; Gerbutavicius et al., 2021). However, a comparatively low score regarding uninterrupted smoothness of the session was reported from clients which may be due to technical issues e.g., internet speed, connectivity problems etc. from both client's side as well as senior dietitian side.

Some significant strengths as well as few limitations were also observed in the study. Firstly, the study provided understanding of preceptors, graduate students and clients' perspective on the approach of using virtual clinics for their dietetics training and consultations. The main limitation was generalizability of results due to limited sample size. In future studies, more sophisticated sampling techniques and methodology can be used to explore the outcomes of using virtual clinics in dietetics supervised practice in large sample size.

## CONCLUSION

The COVID-19 restrictions of physical contact had profoundly affected the style of dietetics supervised practice. The use of virtual clinics for dietetics undergraduates has opened a new pathway to complement and supplement the issues of face to face trainings such as limited slots for trainings which is an issue since last decade. Thus, the virtual platforms can be used an effective methodology for learning and supervised dietetics practice.

### Authors' contribution

RH conceived idea, designed the project and performed the statistical analysis. MJ helped in writing the manuscript and read and approved the final submitted version. NA provided additional intellectual content, contributed to critical revisions of the manuscript.

### Acknowledgments

The authors would like to thank the Senior Dietitians M/S Zuvia Naseem, M/S Hira Sheikh and M/S Tehmina Rashid for their participation in the internship programs and facilitating the students in virtual nutrition counselling. Also thanks to M/S Teba Lateef to moderate these virtual clinical sessions.

## REFERENCES

- ACEND, Accreditation council for education in nutrition and dietetics; 2019. <https://www.eatrightpro.org/acend/accreditedprograms/international-programs>.
- Ajmal M, Arshad MU, Saeed F, Ahmed T, Khan AU, Bader-ul Ain H, et al.; 2016. Exploring the nutritional characteristics of different parts of Fig in relation to hypoglycemic potential. *Pakistan Journal of Life & Social Sciences*, 14(2):115-122.
- Barkai G, Gadot M, Amir H, Menashe M, Shvimer-Rothschild L, Zimlichman E; 2021. Patient and clinician experience with a rapidly implemented large-scale video consultation program during COVID-19. *International Journal for Quality in Health Care*, 33(1):1-6.
- Bawadi H, Al-Jayyousi GF, Du X, Ganji V, Kerkadi A, Moawad J, et al.; 2019. Supervised practice program guided by the accreditation council for education in nutrition and dietetics

standards improves potential employability of nutrition/dietetics graduates: Perspective of employers and preceptors. *BMC Medical Education*, 19(1):1-6.

- Byrne E, Watkinson S; 2021. Patient and clinician satisfaction with video consultations during the COVID-19 pandemic: An opportunity for a new way of working. *Journal of Orthodontics*, 48(1):64-73.
- Combs EL, Schwartz AK; 2020. Creating engaged community scholarship through alternate experiential learning in dietetics education. *Experiential Learning & Teaching in Higher Education*, 3(1):22-25.
- Gerbutavicius R, Brandlhuber U, Glück S, Kortüm G, Kortüm I, Navarrete Orozco R, et al.; 2021. Evaluation of patient satisfaction with an ophthalmology video consultation during the COVID-19 pandemic. *Der Ophthalmologe*, 118(1):89-95.
- Hruska AM, Cawood A, Pagenkopp Lohan KM, Ogburn MB, Komatsu KJ; 2022. Going remote: Recommendations for normalizing virtual internships. *Ecosphere*, 13(3):e3961.
- Kaufman-Shriqui V, Sherf-Dagan S, Boaz M, Birk R; 2021. Virtual nutrition consultation: What can we learn from the COVID-19 pandemic?. *Public Health Nutrition*, 24(5):1166-1173.
- Korneta P; 2018. Net promoter score, growth, and profitability of transportation companies. *International Journal of Management and Economics*, 54(2):136-148.
- Martin P, Lizarondo L, Kumar S, Snowdon D; 2021. Impact of clinical supervision on healthcare organisational outcomes: A mixed methods systematic review. *PloS One*, 16(11):e0260156.
- Martin P, Tian E, Kumar S, Lizarondo L; 2022. A rapid review of the impact of COVID-19 on clinical supervision practices of healthcare workers and students in healthcare settings. *Journal of Advanced Nursing*, 78(11):3531-3539.
- Roper SM; 2022. Virtual supervised practice during the COVID-19 pandemic. Does virtual learning affect the quality of preparation for the RD exam

or beginning Dietetics practice? University of North Florida, Jacksonville, FL.

Rosa M, Giroux I; 2022. Dietetic students' perceptions of learning professional competencies with four simulations throughout a semester. *Canadian Journal of Dietetic Practice and Research*, 83(3):1-5.

Rothwell C, Kehoe A, Farook SF, Illing J; 2021. Enablers and barriers to effective clinical

supervision in the workplace: A rapid evidence review. *BMJ Open*, 11(9):e052929.

Shklarski L, Abrams A; 2021. Effective supervision during the Covid-19 pandemic: The transition to remote learning. In: *A Contemporary Approach to Clinical Supervision*. London, UK: Routledge.

Tarkar P; 2020. Impact of COVID-19 pandemic on education system. *International Journal of Advanced Science and Technology*, 29(9):3812-3814.