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COVID-19 and the impact on the student delivery of exercise physiology services: a mixed method study

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Abstract

Introduction: The COVID-19 pandemic has impacted the face-to-face delivery of exercise with social distancing restrictions preventing close contact between clients and exercise professionals. Additionally, exercise physiology students have had to adapt to these changes and use telehealth to achieve their learning outcomes. This study aimed to explore client and student perspectives of their experience with face-to-face exercise delivery prior to COVID-19 restrictions and telehealth during restrictions.

Methods: Clients and students were invited to complete an online survey exploring their experience with student-led exercise services prior to COVID-19 restrictions and during restrictions. Likert-scale questions were compared using a Wilcoxon test and open-ended responses were thematically analysed.

Results: Prior to COVID-19 restrictions, all students (n = 7) reported that providing face-to-face exercise physiology services resulted in positive learning experiences and clients (n = 12) were satisfied with their experience. During the restrictions, the client satisfaction with exercise delivery via telehealth remained high, however, students' learning experience was hindered by the restrictions.

Discussion and conclusion: For clients, satisfaction with the exercise delivery remained high and the convenience of telehealth were useful during a pandemic. For students, their exercise prescription and ability to assess and monitor their clients were impacted by using telehealth.

I INTRODUCTION

The importance and benefits of regular exercise to reduce morbidity and mortality from cardiovascular disease, cancer, diabetes, depression and other conditions are well documented (Bauman, 2004; Warburton et al., 2006). The inability to undertake physical activity is however detrimental to the management of older adults' health and quality of life (Hogg et al., 2012; Pahor et al., 2014). In Australia, COVID-19 social distancing restrictions have reduced the ability of exercise physiologists to provide face-to-face delivery of exercise (Exercise and Sport Science Australia, 2020). As a result, many older adults and those with health concerns were unable to complete their regular exercise under the guidance of an exercise professional. This discontinuation of supervised exercise may negatively affect the physical and mental health of those who were exercising regularly (Hammami et al., 2020). While home-based physical training is an effective way to improve muscle mass, reduce body weight and manage existing chronic conditions (Marcos-Pardo et al., 2021), clients with such conditions may require the use of specialised equipment and the supervision of suitably qualified exercise physiologists in a clinical setting.

Telehealth, considered to be any form of delivery of care or services via distance, without face-to-face contact (Wosik et al., 2020), may be a promising platform for ensuring the continuity of care and continuation of exercise delivery when face-to-face contact is not possible (Middleton et al., 2020; Newton et al., 2020). While there are conceivable barriers of using telehealth for exercise delivery, such as lack of instant feedback, equipment and motivation (Jansons et al., 2018), it is suggested that technology-related issues such as access to the internet and appropriate bandwidth are not barriers for participation (DeVito Dabbs et al., 2020). Since it is suggested that older adults and those with chronic disease may experience more severe effects of COVID-19 (Wang et al., 2020), telehealth services for the continuity of care for these populations are valuable (Newton et al., 2020).

Currently, the literature surrounding telehealth and exercise delivery has included qualified practitioners working with clients (Eriksson et al., 2009; Iles et al., 2011). Furthermore, few have investigated the value of telehealth for the continuity of exercise delivery during the COVID-19 pandemic (Newton et al., 2020). Additionally, such literature does not investigate the implications of using telehealth as a tool to develop professional skills in tertiary students and how this influences their ability to deliver exercise in a time when face-to-face opportunities are unavailable.

Many tertiary institutions use authentic learning experiences to develop the required skills and attributes of graduate exercise professionals. Traditional approaches to incorporating authentic experiences in tertiary studies have included clinical placements, project work, case studies and simulations (Patrick et al., 2008). In the current environment (at the time of writing) of social distancing and limited face-to-face opportunities, both healthcare services and tertiary institutions have embraced telehealth to maintain service availability (Bokolo, 2021) and to ensure continued learning opportunities for students (Seymour-Walsh et al., 2020).

Presently it is unclear if students receive the same learning outcomes in a telehealth environment and if clients are satisfied with the services provided, when compared to face-to-face delivery of exercise. Therefore, the aim of the current study was to investigate client and student perspectives of their experience with face-to-face exercise delivery prior to COVID-19 restrictions and during restrictions.

II METHODOLOGY

A mixed method study design was utilised to develop online surveys that contained participant demographic questions, open-ended questions and Likert scale responses. Exercise physiology students were provided with one survey and exercise physiology clients were provided with a different survey, as each survey was tailored to capture the unique experiences of students and clients.

A Participants

Thirty-one clients who regularly attended a student-led exercise physiology clinic and 34 students who were completing their final year of their exercise physiology degree and provided face-to-face exercise physiology services to the clients were invited to participate in the study. Students were eligible to participate if they met these criteria and were ineligible to participate if they were not in their final year of their exercise physiology degree and/or had not provided face-to-face exercise physiology services to the clients. Clients were eligible to participate if they regularly participated in face-to-face exercise within the exercise physiology clinic and were deemed suitable to continue to participate in exercise via telehealth. Ineligible clients were those who were not deemed suitable to receive telehealth services. All invited participants met the inclusion criteria. All participants were located in a regional city in Queensland, Australia. Twelve clients and seven students provided consent and completed the survey. Clients were on average 66.1 ± 6.14 years old and included nine females and three males, with all but one participant completing group-based exercise. All clients were screened using the Exercise and Sport Science Australia, Adult Pre-Exercise Screening System, as well as a clinic specific telehealth checklist (Appendix 1) to ensure all clients could safely and effectively participate in telehealth. Demographic information was not obtained from students to assure anonymity.

B Ethics

Ethical approval was obtained from the James Cook University Human Research Ethics Subcommittee, Ethics Approval Number: H8136. Participants were provided with an information sheet and consent was obtained from all participants included in this study.

C Data collection

Data were collected via online surveys. Two surveys were developed to cater for differences in perspectives between clients and students. The clients were asked on a 4-point Likert scale how satisfied they were with receiving face-to-face exercise physiology services from students prior to COVID-19 restrictions and during the COVID-19 restrictions, where telehealth services were provided. Additionally, they were asked the following open-ended questions:

- What are the best aspects of student-led delivery of exercise via telehealth?
- What are the barriers of having students deliver exercise prescription via telehealth?
- Have COVID-19 restrictions impacted your ability to exercise? Please explain your response.
- Have COVID-19 restrictions impacted your ability to manage your health? Please explain your response.

The students were asked if the face-to-face delivery of services was a positive learning experience, if it developed their professional behaviour, self-management skills, communication skills, knowledge, assessment and monitoring skills, and exercise prescription. Students were then asked the same questions, however now regarding COVID-19 restrictions and the delivery of telehealth. All questions were answered on a 4-point Likert scale. Additionally, students were asked the following open-ended questions:

- What are the best aspects of delivering telehealth-based exercise physiology services?
- What are the barriers of delivering telehealth-based exercise physiology services?
- Do you see yourself using telehealth-based exercise physiology in the future? Please explain your response.

D Data analysis

The Likert scale responses did not follow a normal distribution and therefore responses related to face-to-face delivery of exercise physiology services were compared to responses related to COVID-19 restrictions using a Wilcoxon test. Client survey response options were very satisfied (4), satisfied (3), dissatisfied (2) and very dissatisfied (1). Student survey response options were strongly agree (4), agree (3), disagree (2) and strongly disagree (1). Descriptive data including percentage (median [interquartile range (IQR)]; range) of survey response are presented in Table 1 and Table 2. The open-ended responses were thematically analysed using the methods outlined by Braun and Clarke (2006). Specifically, thematic analysis consisted of the following phases: (1) familiarisation with the data, (2) initial coding, (3) identification of themes, (4) review of themes, (5) definition and naming of themes, and (6) production of results (Braun & Clarke, 2006).

III RESULTS

Twelve clients (nine females), aged 60-79 (average age 66.1 ± 6.14 years), completed the survey. Participating clients presented with a range of pathologies, including musculoskeletal, metabolic and cardiovascular conditions. Prior to COVID-19 restrictions, two of these clients attended the student-led clinic on a weekly basis, eight attended twice weekly and two attended three times a week. During the COVID-19 restrictions most clients received exercise delivery via telehealth at home. Two clients however attended the clinic to receive exercise delivery via telehealth, i.e. they attended the clinic to use the equipment while the exercise professionals used telehealth to communicate with them to abide by social distancing requirements. Seven final year exercise physiology students completed the survey. To assure anonymity, demographic characteristics of students were not collected.

Overall, all clients were satisfied (8.3%) or very satisfied (91.7%) with their student-led exercise physiology sessions prior to COVID-19 restrictions. Only 8.3% of clients were dissatisfied with their service during COVID-19 restrictions ($p = 0.157$) and no clients were very dissatisfied pre- or during-restrictions (Table 1). Students were more likely to report that compared to face-to-face sessions, they did not agree that telehealth benefited their assessment and monitoring skills ($p=0.017$) or their exercise prescription skills ($p=0.026$). All students reported that face-to-face exercise delivery positively benefited their learning experience and improved practice competencies such as professional behaviour, self-management skills, communication skills and knowledge. While some students reported that telehealth delivery of exercise did not positively benefit their learning experience or aforementioned practice competencies, the differences were not statistically significant (Table 2).

Table 1
Client satisfaction of student-led exercise physiology services

	Face-to-face (prior to COVID-19 restrictions)				During COVID-19 restrictions			
	VS	S	D	VD	VS	S	D	VD
Client satisfaction	91.7%	8.3%	0%	0%	75%	16.7%	8.3%	0%
	4 [IQR: 4, 4]; range 3 to 4				4 [IQR: 3, 4]; range 2 to 4			

Note: VS = very satisfied, S = satisfied, D = dissatisfied, VD = very dissatisfied

Table 2
Student learning outcomes of student-led exercise physiology services

Student learning outcomes	Face-to-face (prior to COVID-19 restrictions)				During COVID-19 restrictions			
	SA	A	D	SD	SA	A	D	SD
Positive learning experience	85.7%	14.3%	0%	0%	42.9%	28.6%	28.6%	0%
	4 [IQR: 4, 4]; range 3 to 4				3 [IQR: 2, 4]; range 2 to 4			
Professional behaviour	85.7%	14.3%	0%	0%	28.6%	42.9%	14.3%	14.3%
	4 [IQR: 4, 4]; range 3 to 4				3 [IQR: 2, 4]; range 1 to 4			
Self-management skills	71.4%	28.6%	0%	0%	28.6%	57.1%	14.3%	0%
	4 [IQR: 3, 4]; range 3 to 4				3 [IQR: 3, 4]; range 2 to 4			
Communication skills	85.7%	14.3%	0%	0%	28.6%	28.6%	42.9%	0%
	4 [IQR: 4, 4]; range 3 to 4				3 [IQR: 2, 4]; range 2 to 4			
Knowledge	57.1%	42.9%	0%	0%	28.6%	57.1%	14.3%	0%
	4 [IQR: 3, 4]; range 3 to 4				3 [3, 4]; range 2 to 4			
Assessment and monitoring skills	85.7%	14.3%	0%	0%	28.6%	14.3%	42.9%	14.3%
	4 [IQR: 4, 4]; range 3 to 4				2 [IQR: 1, 2]; range 1 to 3 [#]			
Exercise prescription	85.7%	14.3%	0%	0%	28.6%	14.3%	28.6%	28.6%
	4 [IQR: 4, 4]; range 3 to 4				2 [1, 3]; range 1 to 4 [#]			

Note: SA = strongly agree, A = agree, D = disagree, SD = strongly disagree

[#]Significantly different to face-to-face response, $p < 0.05$

The open-ended responses describing the best aspects of using telehealth for exercise delivery resulted in the students indicating that being able to continue with exercise delivery during the COVID-19 restrictions was the most positive aspect of using telehealth. This was outlined by the following responses from students:

“[Telehealth] can reach clients that may not be able to come in so they can still exercise.” Student G

“Still being able to deliver sessions for the client.” Student D

Similarly, the clients also indicated that the best aspect of using telehealth for exercise delivery was the ability to continue with exercise delivery during the COVID-19 restrictions. This was outlined by the following responses from clients:

“I get to still do some exercises which I probably wouldn’t do if I wasn’t signed up.” Client C

“It helps to keep moving.” Client I

Additionally, clients indicated that telehealth was convenient as described by the following responses:

“The convenience of supervised exercise from home.” Client L

“No travel time.” Client K

The open-ended responses describing the barriers of using telehealth for exercise delivery resulted in students identifying three barriers including difficulties correcting exercise technique, limitations of type of exercises and equipment availability, and limited interaction with clients. This was outlined by the following responses from students.

Difficulties correcting exercise technique:

“Technique corrections can be hard for novice clients.” Student A

“Viewing client exercises was difficult to determine whether the environment and exercises themselves were performed safely and correctly.” Student E

Limitations of type of exercises and equipment availability:

“Lack of equipment in their homes.” Student A

“Greatly limited the type of exercises [for example] no ground exercises because the client would forget to move the camera and we couldn’t see and monitor the exercise.” Student B

Limited interaction with client:

“Not as personal so it’s hard to learn as a student.” Student D

“Hard to interact.” Student F

The clients identified that there was limited interaction with the students and that there were technological issues. Interestingly, two clients reported no barriers to participating in telehealth.

Limited interaction with student:

“I feel most of the students are not communicating any motivation. They are just reading and statically completing the session.” Client C

“[I] questioned whether exercises are always done correctly.” Client H

“Some students need to interact more and demonstrate exercises with telehealth clients.” Client L

Technological issues:

“I am computer illiterate.” Client G

“Sometimes [it was] hard to hear.” Client K

“At times I have had difficulty getting into the Zoom [telehealth] session.” Client D

No barriers:

“I can’t think of any - I love it!” Client A

“I didn’t find any barriers. I was happy I could still participate.” Client B

Four students indicated that they would use telehealth in their future career with another student indicating that they would “*Only [use telehealth] for initial interviews or potential someone who can’t make it into the clinic*” Student B. The students (n=6) also indicated that face-to-face delivery is their preferred method of exercise delivery. This was described by the following sample responses:

“I prefer face-to-face as it’s more personal but I think telehealth is a great option for clients who can’t make it into the clinic.” Student G

“Face-to-face is definitely more engaging and enjoyable for both facilitators of the sessions and participants.” Student E

“Face-to-face is far better than telehealth in regards to safety and learning.” Student D

IV DISCUSSION

In summary, all students reported that providing face-to-face exercise physiology services resulted in positive learning experiences prior to the COVID-19 restrictions. Students agreed that delivering face-to-face services improved their professional behaviours, communication skills, knowledge and self-management skills. Similarly, clients had a positive experience, with all clients being satisfied or very satisfied with the face-to-face exercise physiology service they were receiving. During the COVID-19 restrictions, the client satisfaction with exercise delivery via telehealth remained high. However, students indicated that their ability to assess, monitor and provide exercise prescription was hindered by the restrictions, including having limited equipment

and through the inability to prescribe floor-based exercises. The open-ended responses indicated that, in general, face-to-face exercise delivery is more appropriate for client interaction, safety and the student learning experience. Although, it should be noted that telehealth is likely to be an appropriate platform for clients who are unable to attend a clinic in person.

From a client perspective, telehealth has previously been described to have high satisfaction rates of clients or patients for psychotherapy (Backhaus et al., 2012; Bashshur et al., 2016) with high levels of satisfaction also evident for exercise programs (Kratz et al., 2020). The current findings are similar to previous literature with no significant difference ($p = 0.157$) between the client satisfaction of face-to-face exercise delivery and the telehealth exercise delivery. Additionally, clients in the current study found telehealth to be convenient which aligns with previous literature (Polinski et al., 2016). The convenience of telehealth may be even more important during the COVID-19 pandemic as people who have chronic illnesses were advised to stay at home when possible. These findings suggest that telehealth may be an appropriate platform for exercise delivery for clients during a pandemic.

From a student perspective, the majority of learning outcomes were unchanged based on the exercise delivery method. However, it was found that students considered that their assessment and monitoring skills as well as their ability to prescribe exercise were disadvantaged as a result of using telehealth. From a practical standpoint, opportunities to develop assessment, exercise prescription and client monitoring skills in virtual environments could be provided to students prior to the actual delivery of telehealth services to clients. Lane and Rollnick (2007) conducted a review of the literature focusing on the use of simulated patients and role-play in developing communication skills training. The authors note that both strategies are effective in improving communication skills (Lane & Rollnick, 2007). Using strategies such as simulation and role-play could support students to become familiar with telehealth technology and to develop effective communication strategies to support client engagement and cooperation. Simulation-based learning activities using telehealth practices have also been shown to be effective in developing competency in nursing students, improving student engagement and readiness in telehealth delivery (Smith et al., 2018). O'Shea et al. (2019) demonstrated that simulated telehealth experiences in clinical exercise physiology are successful in providing authentic and high-fidelity learning experiences. The structure utilised by O'Shea et al. (2019) included an orientation covering planned learning outcomes, a pre-simulation briefing where students were organised into pairs, the simulation activity where clinical exercise physiology students facilitated 20 minutes of exercise with a "client" via telehealth, and a debriefing session that allowed for performance feedback, student reflection and student feedback. Allowing students to perform in a supported environment could help to address student concerns reported in this study. By working with their peers and utilising the facilitator's feedback, they may adapt their approach and develop their skills in clinical exercise physiology. However, to be successful in using simulation to develop competency in providing telehealth services, O'Shea et al. (2019) recommend that the simulated learning activity include: clear learning objectives, experienced simulation and telehealth facilitators and a well-designed evaluation plan.

Alternatively, and depending on pandemic restrictions, a combination of face-to-face exercise delivery and telehealth exercise delivery may be useful to the student learning experience, as this will allow the students to develop skills across diverse environments. Such activities could also include simulation and role-play facilitated in a face-to-face environment using actors, volunteers or students as simulated clients. This approach could support students to develop exercise prescription and monitoring skills prior to incorporating telehealth to provide a more scaffolded approach to skill acquisition. It is important to note that the benefits of using telehealth outweigh the barriers for students (Harris et al., 2020). Building effective skills in the delivery of telehealth is a priority for tertiary institutions and healthcare providers to ensure students and clinicians can provide safe and effective clinical exercise physiology services during a pandemic.

A positive consequence of social distancing restrictions is that it enabled exercise physiology educators and students to consider approaches to exercise delivery and learning outcomes in different ways. Educators were quickly able to work with students to develop plans to continue

delivering exercise to clients safely, albeit remotely. Students and educators were required to consider factors such as the practicalities of health and safety at client's homes, the technological capabilities of clients, and the effectiveness of communication styles when prescribing and delivering exercise for clients. Importantly, educators needed to ensure telehealth was utilised in a way that allowed students to achieve the learning outcomes required for professional accreditation. For example, students needed to be able to show they could communicate appropriately with clients, demonstrate their knowledge and prescribe exercise using telehealth, and educators needed to ensure they could effectively assess these practice competencies against professional standards. In regional areas such as that of the authors, and especially for clients in remote areas, the use of telehealth may enable exercise delivery to continue for people who reside impractical distances from health services and clinics, are impacted by severe weather (such as prolonged flooding which prevents road travel), and/or have health conditions that preclude them from leaving home. Using telehealth allowed students to explore the practicalities and applications of telehealth and reflect upon how they may use it in the future.

This study is not without limitations, including limited sample sizes of both sample groups. However, the results of the current study are likely to be generalisable to other authentic learning approaches, such as in a student-led health service, from both the client and student perspective, and may be relevant to a number of exercise-based professionals. While it is feasible to provide exercise delivery via telehealth with high client satisfaction and mostly high agreement for student learning outcomes, future research should collate health-related measures to evaluate the effectiveness of telehealth for the management of chronic conditions, particularly during a pandemic.

V CONCLUSION

In conclusion, the COVID-19 pandemic has presented a unique student learning experience and has changed exercise delivery services. The ability to provide exercise prescription via telehealth during the pandemic has been vital for the continuity of care for clients and has provided students with a learning experience, which they may be able to use in future practice, particularly for clients who are unable to attend a clinic in person. Additional resources may be required to ensure students can assess and monitor their clients effectively and further emphasis may need to be placed on exercise prescription with limited equipment.

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Appendix 1

Telehealth Expression of Interest

Name: _____ Phone: _____

Is the Client interested in Telehealth? Y / N

If yes, is the client confident using the technology or would they be suited to a home program?

Pre-measure equipment available: (E.g. BGL Monitor. BP Monitor)

Exercise Equipment Available:

APSS Risk Rating: (Clinical Considerations to make in the home environment. E.G. Falls Risk)

Name of AEP/SEP Contacting Client: _____

*Telehealth allows Exercise Professionals to monitor your health and physical activity levels via an online telecommunications platform such as Skype, Facetime, or even a phone call. Utilising this service will allow you to continue working towards your goals from home.