

The Impact of the COVID-19 Lockdown on Physical Therapy Undergraduates and Their Families. A Qualitative Study from the United Arab Emirates

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Background: The COVID-19 pandemic closed most establishments in the United Arab Emirates except health care and other essential services from 8 March 2020 until 24 June. By 22 March, most citizens were working online, including physical therapy students, and a no-movement policy restricted exercise to homes. The lockdown ended partially in August 2021 and almost complete by January 2022.

Objective: We aimed (1) to explore the physical activities of advanced undergraduate physical therapy students and their families during the lockdown, (2) to discuss how participants helped promote and maintain their own and their family's physical health, and (3) to identify what knowledge and skills gained in their physical therapy study students utilized during the lockdown.

Methods: We took a qualitative approach; a one-to-one semi-structured interviews were conducted by Year 4 physical students who at the time were registered for a module covering qualitative research methods. The students interviewed other physical therapy students from year 4 and 5 who were recruited using convenience sampling from a health sciences educational institution. Interviews were conducted and recorded on the Zoom platform and transcribed verbatim. Thematic analysis was utilised to analyse the data.

Findings: Forty-six students agreed to participate, and data saturation was achieved with interviews of 24 students. During the COVID-19 Stay Home—Stay Safe initiative, students of physical therapy were found to be physically active and to have designed home exercise programs for themselves and their families. Adherence to regular exercise was high among the students but low among family members. Three overarching themes, each with three subthemes, emerged through synthesis, coding, and categorizing.

Conclusion: Undergraduate students can effectively promote their own and their family's health. Energy imbalance and increasing neck, shoulder, and back pain among youth and lack of exercise among adults, midlife, and older, raise health concerns.

Keywords: COVID-19, physical therapy students, pandemic, sedentary behaviour, health promotion, public health, family health

Introduction

Physiotherapists all over the world have been frontline workers in fighting COVID-19. The World Confederation for Physical Therapy, recognizing the role of physiotherapists during the COVID-19 pandemic, released a clinical practice guideline.¹ Physiotherapists are caring for recovering patients in all stages of their rehabilitation, whether acute, subacute, or long-term.² Students of physical therapy have a lot to offer as well by volunteering in hospitals and maintaining public health. Our intent was to explore the extent to which the students are actively involved in managing their own and their family's health, which is vital during this pandemic.

Temporarily, a strict no-movement policy closed all the gyms, pools, and other public places people would normally exercise. Living arrangements in the United Arab Emirates (UAE), which are highly varied, may offer space for physical

activities, but for those living in apartments, movements may be highly constrained. Growing public health concerns in the UAE, including obesity, diabetes, and cardiovascular conditions,^{3,4} had prompted recommendations to exercise regularly and eat a balanced diet, but the lockdown affected adherence, forcing concerns to grow and pressuring an already overburdened health care system.^{5,6}

Within 3 weeks of lockdown initiation, the UAE implemented online classes for all students from primary school through higher education. This sudden change in learning posed challenges for all students because they had to spend a substantial amount of time working on their laptops, which could be a cause for mechanical neck and back pain.⁷ In addition, most employees were asked to work remotely from home. This added further problems for many families because of the lack of basic infrastructures, such as tables and chairs with adjustable heights to maintain good ergonomics. The lockdown continued partially till August 2021 and almost return to normal was not until January 2022.

To add to this, several families were faced with multiple challenges such as financial strain, coping with technology, uncertainty about their jobs, the impact of the highly contagious COVID-19 on their family members, and vulnerability to the virus. These unavoidable stresses can have a great impact on mental and physical health.⁸

As a part of the Stay Safe -Stay Home initiative- The government and the media recommended keeping people active and moving within their own homes. During this period, several videos were released on social media featuring general exercises. No specific guidelines accompanied the content, setting up safe use practices, especially ones directed toward those with preexisting physical conditions.

The United Arab Emirates has three academic institutions offering a four-year undergraduate physical therapy program. All the programs follow international standard of physical therapy education covering all the core areas with theoretical, practical, and clinical components.

With the theoretical, practical, and clinical knowledge gained through the physical therapy studies in the UAE, we believed that students of physical therapy had the skills to engage actively in maintaining their own and their family's physical health and fitness in the face of home confinement and multilevel stresses on physical health. This qualitative study is the first of its kind to examine the lives of undergraduate physical therapy students during a disaster, the COVID-19 pandemic lockdown, in the UAE. The main aim was to explore the role of undergraduate physical therapy students in promoting their own and their families' health during a lockdown, and three objectives were paramount: (1) to explore the activities of participants and their families, (2) to identify approaches taken by the participants to maintain their own and their family's physical health, and (3) to identify what knowledge and skills gained in physical therapy studies were utilized in promoting their own and their family's health.

Methods

Qualitative Approach and Research Design

This research explores the roles of physical therapy students in maintaining their own and their family's health during COVID-19 lockdown through qualitative research. One-on-one interviews focused on the experiences and perceptions of participants, rather than their characteristics. This study intended to understand the family situations during the COVID-19 pandemic and to gain deeper insight into how students participated in promoting their physical activity and that of their families, the qualitative method was deemed the best approach.

Context and Sampling Strategy

After the stay-home policy was imposed, all participants were engaged in online courses half of the time and in preparing to volunteer for clinical practice for the other half of the time (clinical placements had suddenly come to a halt). All participants were scheduled to start their clinical placements or internships when restrictions from COVID-19 were lifted.

Using convenience sampling, students from two cohorts of physical therapy students in a health care educational institution in the Emirates of Abu Dhabi were invited to take part in this study. Participants had to be enrolled in year 4 or 5 of physical therapy and to have completed the core physical therapy courses, including musculoskeletal and cardiorespiratory studies, neurology, and research methods. In addition, they all had clinical experience through clinical placement (a minimum of 8 weeks for year 4 students to a maximum of 35 weeks for year 5 students. These criteria were

applied because the skills and competencies gained through clinical placement enabled them to design and implement home programs or therapies for themselves or their family.

Ethical Issues

This study was reviewed and approved by Fatima college of Health Sciences Ethics Review Committee (No. INTSTF007PTY20). The investigation conforms with the principles outlined in the Declaration of Helsinki.⁹ All participants signed informed consent forms and were given the option to permit having transcriptions of their interviews be used in publications. In addition, each student interviewer had to either accept or decline having the supervisors use the data collected by them for publication. For quotations to be included here, they were required to be accompanied by consent from both interviewer and interviewee.

Data Collection

Data collection took place between the seventh to twelfth of June 2020. Interviews were conducted by year 4 students of physical therapy enrolled in a research methods course who were covering qualitative research methods as a part of their course. All interviews were conducted in English (all teaching is in English at this health care institution). All student interviewers were trained on data collection techniques, and each interviewer conducted two semi-structured interviews. All interviews were observed by peers, who provided timely feedback. In addition, some interviews were monitored by the researchers for quality control.

A group e-mail outlining the main purpose of the study and inviting them to take part in it was sent to all the year 4 and 5 students by the researchers. Those who consented were randomly allocated to each interviewer by the researchers, and their contact details were provided. Participants were further contacted by the individual interviewers with the participant information sheet, consent form, and two options for a convenient time for the interview.

Consent forms were signed by both the interviewer and the interviewee.

All interviews took place via Zoom, the online video conferencing platform, and were all audio recorded.

Data Collection Instrument

The interview questions consisted of some predetermined open-ended questions prepared by the interviewers in their small groups of four or five. The main framework of interview questions was provided by the authors covering utilization of knowledge and skills covered in physical therapy curriculum in prevention of issues related the movement restriction and stay at home during the lockdown. The examples included incorrect posture, reduced fitness and work related ergonomically issues. Although each group composed slightly different interview questions, they were carefully reviewed by the researchers to ensure that the questions adequately focused on the main aims of the study. Probes were used appropriately during the interview to gain in-depth information.

Data Analysis

Braun and Clarke's model of thematic analysis¹⁰ was utilised to analyse the qualitative data because of the philosophical underpinnings of this research focused on the interpretive approach. Hence, we systematically coded the data to identify patterns within the data to provide a rich description of the phenomenon using meaningful themes. All interviews were transcribed for analysis. Three researchers independently reviewed the interview materials, and they summarized and extracted the meaningful statements as codes. Codes with similarities were grouped together to form themes.

Results

Forty-six students invited to participate accepted, and data saturation was achieved with interviews of 24 students. These 24 students of physical therapy from year 4 and year 5 classes were women attending an institution in the UAE dedicated solely to education of women. All interviews were conducted using the Zoom platform about 12 weeks after the lockdown was imposed in the UAE, and there were no technical issues or disruptions during the interviews. Interviewers engaged participants by allowing the interviewee to speak, probing only when necessary, and remaining neutral to avoid any biases. Each interview lasted between 12 to 24 minutes (mean, 14 minutes).

Three main themes emerged from the data with three further subthemes within every theme. Selected quotes from the participants substantiating the themes and subthemes are presented in the [Supplementary Boxes 1–3](#) which are attached as an [Appendices](#).

Theme 1: Adapting to Lockdown-Imposed Changes to Routine

Three subthemes emerged for this theme and the quotes to support the subthemes are attached as [Appendix 1 \(Supplementary Box 1\)](#). The subthemes are as follows:

Changes in Exercise Regime

During the lockdown, almost all the participants had incorporated exercises into their daily activity—even those who never exercised regularly before the pandemic. Though the type and the length of the exercises changed drastically for those who went to the gym or took outdoor walks before the lockdown, not much was different for those who always exercised at home before the pandemic, as they continued exercising as usual. Others took advantage of the time and the flexibility newly available to them.

Differences in Study and Work Pattern

All participants continued learning online during the quarantine. Most had siblings studying or working from home, and all their work/study patterns had changed. They spent much more time in front of the computer or smart devices without a proper workspace. “One of the common problems that many of my family members face—not only me—was basically pain in the upper back and around the neck”, one participant said. Students spent most of the time on the sofa or on their beds with very few breaks, particularly during the exam period, which occurred in the middle of the lockdown for students at all levels.

Enriching Activities

Participants spent much more quality time with their families watching TV together or playing board games. Some spent time reading, cooking, and creating their own videos or Instagram pages, which they said they would not have normally done if not for the lockdown. A few said their sleeping pattern had changed completely, and they were calmer and much more relaxed than usual.

Theme 2: Maintaining Physical Health During the Lockdown

A total of three subthemes emerged for this theme and the quotes to support the subthemes are attached as [Appendix 2 \(Supplementary Box 2\)](#). The subthemes are as follows:

Regular Home Exercises

Participants said that they used a range of physical activities at home to keep themselves fit ([Box 2](#)). Very few participants contacted their personal trainers for a plan to carry on the exercise at home. Most used YouTube videos or followed Instagram influencers. Almost all participants said they incorporated stretching and strengthening programs with routine aerobic exercise. Some tried group exercises with their family, but they perceived interest in exercise fading away within a few days after working well in the beginning.

Postural Maintenance and Correction

At the beginning of the lockdown, many of them did not expect to spend so much time learning online and did not focus on their posture while studying. That changed when they started to experience neck or back pain. They then said very quickly that they tried to correct it and started stretching and changing positions with regular breaks. Some educated their siblings, who were spending longer hours in front of the laptop, about maintaining good posture. “Basically, posture awareness—correct posture—and also the correct way to sit” were advice family members working long hours in front of a laptop needed, according to one student.

Access to Resources

In the initial stages of lockdown, most found exercise difficult at home due to a lack of space, fitness equipment, and other resources that they were used to having. Most have had “to improvise”, as one participant said, and others noted family members came to them to borrow what equipment they did have at home. Prior to starting the home exercise program, the participants had to consider various aspects such as place, time, equipment, and exercise format. The most convenient place was their bedroom, where they felt there was more privacy with fewer distractions. Some of them were constrained by sharing space, so they had to take shifts in order to exercise. As the lockdown continued with uncertainty, they bought some of the basic equipment online such as a yoga mat, dumbbells, and resistance bands (Thera Band, Akron, OH, USA). However, none spoke about buying furniture for their workstations, except one who said that if the pandemic continued, she would consider buying a good desk and chair.

Theme 3: Applying Physical Therapy Knowledge and Skills

Three subthemes emerged for this theme and the quotes to support the subthemes are attached as [Appendix 3 \(Supplementary Box 3\)](#). The subthemes are as follows:

Being an Educator

The participants utilized the knowledge gained from anatomy, biomechanics and exercise therapy to safely and effectively carry on with their exercises ([Box 3](#)). They designed their exercises based on the needs of themselves and their family. The type, dosage, and progressions they planned avoided painful stretches or overtiring exercises. Some of them reported monitoring and educating themselves and their families on physical conditioning, including cardiorespiratory endurance, flexibility, strengthening, and stretching for improved health and well-being.

Being a Therapist

Drawing from their knowledge of musculoskeletal and clinical experiences, the participants reported addressing some of the musculoskeletal conditions (neck, back, and knee pain) in exercise prescriptions for themselves and their family members. They have assessed and prescribed therapeutic exercises and have used hot packs or transcutaneous electrical nerve stimulation (TENS) therapy to relieve pain. One participant, whose 14-year-old sister attended physical therapy for help coping with scoliosis, explained, “Before the pandemic I attended ... her physical therapy sessions [with her] but now advise her and monitor her exercises.”

Adherence and Motivation

Adherence to regular physical exercises at home by the participants was reported to be quite high. They wanted their endurance and physical fitness to be high, because they expected to start clinical internships (year 5) or placements (year 4) in August or September. Most reported that some family members who never regularly exercised before joined the participants enthusiastically for a few days; however, interest and enthusiasm faded subsequently. Almost all participants expressed high motivation to keep themselves active and fit during the lockdown.

Discussion

This qualitative study explored the role of undergraduate physical therapy students in promoting their own and their family’s health during the lockdown of COVID-19 in the UAE. Changes are inevitable during this pandemic, and students of physical therapy made good use of the time in maintaining their own and their family’s physical health. Home exercise programs have been a realistic alternative for many during the lockdown who have previously been exercising in gyms, in pools, and on walking paths.

Obesity and diabetes are highly prevalent in the UAE,¹¹ particularly among adolescents.⁴ Associated cardiovascular conditions can be controlled to a greater extent if risk factors are managed well,³ as cardiovascular disease is one of the leading causes of mortality in the UAE.¹² Students reported that previously active family members continued with home exercise programs, whereas those who were not usually active were not committed to regular exercise during lockdown, particularly young adults. Regular physical exercises and a healthier lifestyle can play a very vital role in preventing

cardiovascular disease. Concurring with Mattioli et al,⁵ we believe that there is now a greater need to exercise regularly and maintain a good diet to avoid the cardiovascular and other risks associated with the infection during the pandemic.

No adherence to regular physical exercises and over reporting of the activities have always been a major issue in surveys among the general population and patients.¹³ Since most participants of this study reported exercising regularly since the onset of pandemic, we believe reports in this study to be true to a greater extent, especially since this was verified subjectively by questioning interviewees further about the design, type, and the duration of exercises.

We also examined a few of the intrinsic and extrinsic motivational factors associated with the adherence.¹⁴ One major motivation for participants for staying active was to prepare well for their upcoming clinical placement or internship. As one participant said, “other than that to just stay fit”, she wanted to prepare herself for when the pandemic was over so that she could “go back to work with full endurance, the same endurance” she had before the pandemic. Physical fitness of students of physical therapy is a professional requirement and improves patient care.¹⁵ However, there is a need for further in-depth understanding of motivational factors among physical therapy students in initiating and maintaining physical activity.

From the interviews, it was evident that physical therapy practical skills were utilized maximally by the participants to design home programs. Yoga mats, Thera bands, weights, and treadmills were the most common equipment used by the participants and their families, as they were easily available through online shopping during the lockdown. Owing to their physical therapy training, choosing the right equipment seemed effortless. They reported that they took all the safety aspects into consideration and educated family members about the proper use of these exercise tools. Most focused on cardiovascular fitness and strengthening exercises, because their interest was building endurance. The physical therapy curriculum covers extensively the exercise prescription and guidelines for healthy individuals across all ages.

The participants reported using weighing scales and measuring tapes as objective measures and felt the improvement in their endurance. We believe that the students of physical therapy possess the ability to design and maintain a much more structured assessment and utilize some of the feasible objective measures. This helped them track their progress and adhere to exercises, for both themselves and everyone at home, was also suggested by Beinart et al,¹⁶ and Palazzo et al.¹⁷

Social media is an integral part of students’ daily life around the globe. This was much more evident in this study during the lockdown, as most participants watched YouTube videos and followed Instagram fitness influencers. Participants were able to critically evaluate the credentials of those resources, and they selectively utilized resources that they thought were reliable.

All UAE students adopted online learning throughout the lockdown, and older adults working from home spent extended hours on their laptops. Many students and/or their family members experienced neck and upper back pain because of prolonged sitting and using nonadjustable chairs and tables. This pain worsened or became more prevalent during exam periods because of additional stress and lengthier exams. The prevalence of neck and back pain high is ranked the sixth most common condition causing disabilities among young adolescents and older adults in the UAE.¹² Musculoskeletal issues, particularly neck and shoulder pain, are bound to grow because of high usage of smart devices and laptops at home across all ages.^{18–20}

The therapeutic approaches (stretching, strengthening, manual therapy, and correction of posture) taken by the participants in this study to address the mechanical neck and back pain were known and widely used approaches.^{21,22} Simple therapeutic measures are extremely important now, whether during the pandemic or after the pandemic. Therefore, wider community engagement is necessary to raise awareness about maintaining good posture and promoting regular physical activities. In addition, some of the participants and/or their family members who had preexisting musculoskeletal conditions reported that their symptoms worsened during the lockdown because of interruptions in the outpatient physical therapy services. Timely advice and simple therapeutic measures provided by the participants were reported to be helpful. This suggests that the year 4 and 5 students of physical therapy are highly resourceful and should be encouraged to engage in public health, which will prepare them to be autonomous practitioners.²³

Conclusion

Physical therapy knowledge, skills, and clinical experiences provided a good foundation for aiding students in coping with lockdown’s physical challenges. Students played important roles as educators and were highly resourceful for their

families. They were able to provide simple yet reliable therapeutic strategies with the available resources. However, we believe that the physical therapy curriculum must give much more focus than before on family and public health.

We are concerned about the rapidly growing health issues particularly related to sedentary lifestyles, overeating, and the added stress during the COVID-19 pandemic, which is also highlighted by Martinez-Ferran et al.²⁴ This study highlights the need for national or regional campaigns to promote family and physical activities for the young and old, especially those that can be continued after the pandemic.

Physical therapy students could use social media as a venue to reach out to a greater audience, and they should be encouraged formally to create YouTube videos and Instagram pages.

Though including only a small and demographically restricted group of participants, this cross-sectional study provides anecdotal evidence in medias res of pandemic-induced changes in energy imbalance and provides insight and actionable contextual content from physical therapy-aware key informants. Further studies should explore the level of engagement in home exercise across all ages, not only in the UAE but beyond, particularly in countries in which obesity threatens gains made by advances in public health before the pandemic.

Acknowledgments

We acknowledge the active engagement of our students who collected the data for this study and the participants who provided their valuable input into this study.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Disclosure

The authors report no conflicts of interest in relation to this work.

References

1. Thomas P, Baldwin C, Bissett B, et al. Physiotherapy management for COVID-19 in the acute hospital setting: clinical practice recommendations. *J Physiother*. 2020;66(2):73–82. doi:10.1016/j.jphys.2020.03.011
2. Alshehri MA, Alhasan H, Alayat M, et al. Factors affecting the extent of utilization of physiotherapy services by physicians in Saudi Arabia. *J Phys Ther Sci*. 2018;30(2):216–222. doi:10.1589/jpts.30.216
3. Al-Shamsi S, Regmi D, Govender RD. Incidence of cardiovascular disease and its associated risk factors in at-risk men and women in the United Arab Emirates: a 9-year retrospective cohort study. *BMC Cardiovasc Disord*. 2019;19(1):148. doi:10.1186/s12872-019-1131-2
4. Alzaabi A, Al-Kaabi J, Al-Maskari F, Farhood AF, Ahmed LA. Prevalence of diabetes and cardio-metabolic risk factors in young men in the United Arab Emirates: a cross-sectional national survey. *Endocrinol Diabetes Metab*. 2019;2(4):e00081. doi:10.1002/edm2.81
5. Mattioli AV, Sciomer S, Cocchi C, Maffei S, Gallina S. Quarantine during COVID-19 outbreak: changes in diet and physical activity increase the risk of cardiovascular disease. *Nutr Metab Cardiovasc Dis*. 2020;30(9):1409–1417. doi:10.1016/j.numecd.2020.05.020
6. Stults-Kolehmainen MA, Sinha R. The effects of stress on physical activity and exercise. *Sports Med*. 2014;44(1):81–121. doi:10.1007/s40279-013-0090-5
7. Mork R, Falkenberg HK, Fostervold KI, Thorud HMS. Visual and psychological stress during computer work in healthy, young females-physiological responses. *Int Arch Occup Environ Health*. 2018;91(7):811–830. doi:10.1007/s00420-018-1324-5
8. Suso-Ribera C, Martín-Brufau R. How much support is there for the recommendations made to the general population during confinement? A study during the first three days of the COVID-19 quarantine in Spain. *Int J Environ Res Public Health*. 2020;17(12):4382. doi:10.3390/ijerph17124382
9. Rickham PP. Human experimentation. code of ethics of the world medical association. Declaration of Helsinki. *Br Med J*. 1964;2(5402):177. doi:10.1136/bmj.2.5402.177
10. Braun V, Clarke V. *Successful Qualitative Research: A Practical Guide for Beginners Sage*. London: Sage Publications Ltd; 2013.
11. Sulaiman N, Elbadawi S, Hussein A, et al. Prevalence of overweight and obesity in United Arab Emirates expatriates: the UAE national diabetes and lifestyle study. *Diabetol Metab Syndr*. 2017;9:88. doi:10.1186/s13098-017-0287-0
12. Institute for health metrics and evaluation. United Arab Emirates; 2017. Available from: <http://www.healthdata.org/United-Arab-Emirates>. Accessed July 28, 2022.
13. Theofilou P, Saborit AR. Adherence and physical activity. *Health Psychol Res*. 2013;1(1):e6. doi:10.4081/hpr.2013.e6
14. Gavin J, Keough M, Abravanel M, Moudrakovski T, Mcbrearty M. Motivations for participation in physical activity across the lifespan. *Int J Wellbeing*. 2014;4(1):46–61. doi:10.5502/ijw.v4i1.3
15. Lo K, Curtis H, Keating JL, et al. Physiotherapy clinical educators' perceptions of student fitness to practise. *BMC Med Educ*. 2017;17(1):16. doi:10.1186/s12909-016-0847-2
16. Beinart NA, Goodchild CE, Weinman JA, Ayis S, Godfrey EL. Individual and intervention-related factors associated with adherence to home exercise in chronic low back pain: a systematic review. *Spine J*. 2013;13(12):1940–1950. doi:10.1016/j.spinee.2013.08.027

17. Palazzo C, Klinger E, Dorner V, et al. Barriers to home-based exercise program adherence with chronic low back pain: patient expectations regarding new technologies. *Ann Phys Rehabil Med*. 2016;59(2):107–113. doi:10.1016/j.rehab.2016.01.009
18. Algarni AD, Al-Saran Y, Al-Moawi A, Bin Dous A, Al-Ahaideb A, Kachanathu SJ. The prevalence of and factors associated with neck, shoulder, and low-back pains among medical students at university hospitals in central Saudi Arabia. *Pain Res Treat*. 2017;2017:1235706. doi:10.1155/2017/1235706
19. Chan LLU, Wong AYL, Wang MH, Cheung K, Samartzis D. The prevalence of neck pain and associated risk factors among undergraduate students: a large-scale cross-sectional study. *Int J Ind Ergon*. 2020;76:102934. doi:10.1016/J.ERGON.2020.102934
20. Gheysvandi E, Dianat I, Heidarimoghadam R, Tapak L, Karimi-Shahanjarini A, Rezapur-Shahkolai F. Neck and shoulder pain among elementary school students: prevalence and its risk factors. *BMC Public Health*. 2019;19(1):1299. doi:10.1186/s12889-019-7706-0
21. Damgaard P, Bartels EM, Ris I, Christensen R, Juul-Kristensen B. Evidence of physiotherapy interventions for patients with chronic neck pain: a systematic review of randomised controlled trials. *ISRN Pain*. 2013;2013:567175. doi:10.1155/2013/567175
22. Masaracchio M, Kirker K, States R, Hanney WJ, Liu X, Kolber M. Thoracic spine manipulation for the management of mechanical neck pain: a systematic review and meta-analysis. *PLoS One*. 2019;14(2):e0211877. doi:10.1371/journal.pone.0211877
23. McMahan S, O'Donoghue G, Doody C, O'Neill G, Barrett T, Cusack T. Standing on the precipice: evaluating final-year physiotherapy students' perspectives of their curriculum as preparation for primary health care practice. *Physiother Can*. 2016;68(2):188–196. doi:10.3138/ptc.2015-11E
24. Martinez-Ferran M, de la Guía-Galipienso F, Sanchis-Gomar F, Pareja-Galeano H. Metabolic impacts of confinement during the COVID-19 pandemic due to modified diet and physical activity habits. *Nutrients*. 2020;12(6):1549. doi:10.3390/nu12061549

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