






Medicare reimbursed telehealth exercise physiology services were underutilised through the coronavirus (COVID-19) pandemic: an ecological study

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ABSTRACT

Objectives. To describe the quantity and cost of in-person and telehealth exercise physiology (EP) reimbursed under the Medicare Benefits Schedule (MBS) in Australia before and during the coronavirus disease 2019 (COVID-19) pandemic. **Methods.** This study uses publicly available MBS data to describe EP services (in-person and telehealth) reimbursed by Medicare between January 2020 and December 2021. Data were extracted at state and national levels. **Results.** Despite a reduction in quantity and cost in quartile (Q) 2 2020 (41% reduction), MBS-reimbursed EP services have remained relatively constant at a national level through the 2-year observation period. Service claims averaged 88 555 per quarter in 2020 and 95 015 in 2021. The proportion of telehealth consultations relative to total quarterly claims for EP was <1% in Q1 2020, 6.0% in Q2 2020, 2.4% in Q3 2020 and 1.7% in Q4 2020. This dropped to an average of 1.4% across 2021 (Q1–Q4). States undergoing lockdown periods reported decreased service rates relative to February 2020 (i.e. pre-lockdown). EP services were associated with a Medicare expenditure of AUD17.9M in 2020 (telehealth = 2.4% of total) and AUD19.7M (telehealth = 1.5% of total) in 2021. **Conclusions.** Quantity and cost of MBS-reimbursed EP services remained relatively constant throughout the height of service disruption due to COVID-19 (2020/21). Telehealth uptake during this time has been minimal for EP.

Keywords: CDM, chronic disease, COVID-19, exercise, exercise physiology, MBS, Medicare, telehealth.

Background

Physical inactivity is a leading risk factor associated with the development and worsening of lifestyle-related chronic diseases.¹ In 2017–18, 55% of Australian adults did not reach the recommendation to achieve at least 150 min of moderate intensity aerobic activity per week.² Only 15% of Australian adults met both the aerobic and muscle strengthening physical activity guidelines.² Regular exercise has a beneficial influence on health measures across chronic disease groups.³ Accredited Exercise Physiologists (AEPs) provide individualised assessment and evidence-based exercise delivery and prescription for patients with chronic disease.⁴ As of December 2021, 7059 AEPs are accredited with Exercise & Sport Science Australia representing a ~six-fold increase since 2010.⁵

The Australian Government developed the Chronic Disease Management (CDM) program in 2005.⁶ Under the program a general practitioner is able to refer a patient with chronic disease to an allied health professional for five subsidised sessions per calendar year.⁶ Exercise physiology (EP) services delivered by AEPs are included in the program.⁷ In 2020, EP was the fifth highest contributing allied health professional to the CDM program.

Traditional forms of healthcare delivery are being challenged during the coronavirus disease 2019 (COVID-19) pandemic. Due to worldwide health restrictions, in-person consultations have become difficult to conduct and participate in. This has seen healthcare

utilisation reduce by a third worldwide for patients with chronic conditions.^{8,9} In March 2020, the Australian Government introduced new temporary telehealth item numbers through the Medicare Benefits Schedule (MBS – part of Australia's health scheme).¹⁰ Telehealth EP services encapsulate any remote exercise delivery or advice, facilitated through technology, between the practitioner and client.¹¹ Although these item numbers have now been continued indefinitely,¹² their impact regarding EP service provision remains unclear. This information will help to inform our understanding of whether telehealth may be a viable option for delivery in the future.

Therefore, the aim of this study was to describe the quantity and cost of in-person and telehealth EP services reimbursed under the MBS at a state and national level, before and during the COVID-19 pandemic (2020–21).

Methods

This study used publicly available MBS data to describe EP services reimbursed by Medicare between January 2020 and December 2021.¹³ Medicare has been Australia's universal health care scheme since 1984, with the MBS containing a list of all health services that the Australian Government subsidises.¹⁴ Ethics approval for this project was granted by The University of Queensland's Human Research Ethics Committee (2022/HE000136).

Data were exported for all in-person and telehealth (videoconference and phone) EP services. Services examined included exercise consultations conducted by an AEP and referred from a general practitioner. This included individual/group assessment and follow up, services provided to individuals of Aboriginal and Torres Strait Islander descent, and appointments into residential aged care facilities (RACF). A full list of the MBS EP codes and their introduction dates are presented in Supplementary Table S1. MBS item numbers were introduced in December 2020 for services provided into RACF. Besides item numbers 93 504, 93 518 and 93 527 (in-person RACF), these have not been utilised up until December 2021 (Supplementary Table S2).

Data were exported from the Medicare Australia website to Microsoft Excel (2018, Microsoft Corp., Redmond, WA, USA) prior to analysis. Unlike in-person item numbers, telehealth item numbers for allied health consultations (codes with * in Supplementary Table S1) did not differentiate between different allied health providers' specialty. Therefore, a series of scenarios were created to approximate the quantity and cost of allied health telehealth services that were conducted by AEPs. First, the percentage of EP services from all allied health CDM claims from 2021 was calculated to be 5%.¹³ This was then used as the assumed percentage of EP services from the telehealth item numbers. Then a sensitivity analysis used a lower (2%) and upper (10%) threshold to see how these changed the data. Rates of service delivery

were reported as quantity and cost of services for each quarter of the year. Descriptive analyses were utilised (including bar/line graphs) for monthly services and presented according to delivery mode (in-person, videoconference and phone) to properly account for the time course of pandemic restrictions.

Data were extracted at both a state and national level, with state data presented as a per capita consultation rate (consultations per 100 000 of state population). Descriptive analyses for in-person MBS rebated EP services were reported per quarter, with monthly delineations made for public health state lockdown periods to mitigate the spread of COVID-19.¹⁵ This was completed to illustrate the inter-state variability in relative in-person claim rates. State lockdowns were defined as any period where a state government mandated a stay-at-home lockdown for any residents from any local council area.

Results

Quarterly data for national EP claims through MBS are presented in Table 1, Fig. 1, with quarterly breakdown of specific MBS item numbers presented in Supplementary Table S2. EP service claims averaged 88 555 per quarter in 2020 (Table 1). Item number 10 953 (in-person individual EP CDM) was the most claimed, with 98% of the 614 956 total claims made throughout 2020–21 (Supplementary Table S2). The largest reduction in services claimed was seen in Q2 2020, where in-person EP claims had a 41% reduction. Specifically, in-person CDM claims reduced by 57.3% from March 2020 to April 2020, coinciding with the first wave of national COVID-19 related lockdowns (Fig. 1). Despite this initial reduction, average claims for Q3/Q4 2020 were 101 069, surpassing pre-pandemic levels (Q1 2020) by 8.2% (Table 1). These levels were sustained over time, with EP claims averaging 95 015 per quarter in 2021 (Table 1).

Phone and videoconference telehealth item numbers were introduced in March 2020. Subsequently, these consultations accounted for between 6% (Q2 2020) and 0.9% (Q2 2021) of all consultations per applicable quarter (Table 1). The greatest uptake for both videoconference (2%) and phone (4%) consultations occurred in Q2 2020 (Fig. 1, Table 1).

Assuming a total proportion of 5% (2–10% reported in parenthesis for sensitivity analysis) of total allied health telehealth (videoconferencing and phone) was conducted by AEPs, the proportion of telehealth consultations in respect to all MBS EP consultations were <1% (0–0.1%) in Q1 2020, 6.0% (2.4–12%) in Q2 2020, 2.4% (0.9–4.8%) in Q3 2020 and 1.7% (0.7–3.4%) in Q4 2020. This rate dropped to a sustained averaged of 1.4% (0.5–2.7%) of EP consultations across Q1–4 of 2021 (Table 1).

Quarterly data for EP services per capita (services per 100 000 of the state/territory population) are presented in Supplementary Table S3. South Australia represented the largest decrease, with in-person services declining 55.9% from Q1 to Q2 2020. The Northern Territory represented

Table 1. Quarterly data for exercise physiology services reimbursed by Medicare.

	2020				2021			
	Q1 ^A	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Quarter total in-person, <i>n</i>	93 408	55 122	94 036	104 020	99 613	98 300	84 234	93 220
Quarter total videoconference ^B , <i>n</i>	9 [4–18]	1 154 [462–2308]	762 [305–1524]	510 [204–1020]	308 [123–616]	255 [102–510]	525 [210–1051]	458 [183–916]
Quarter total phone ^B , <i>n</i>	26 [10–52]	2361 [945–4723]	1551 [620–3102]	1259 [504–2518]	765 [306–1530]	627 [251–1254]	1131 [452–2261]	984 [393–1967]
Quarter total ^B , <i>n</i>	93 443	58 637	96 349	105 789	100 686	99 182	85 890	94 662
Videoconference, %	0.0 [0.0–0.0]	2.0 [0.8–3.9]	0.8 [0.3–1.6]	0.5 [0.2–1.0]	0.3 [0.1–0.6]	0.3 [0.1–0.5]	0.6 [0.2–1.2]	0.5 [0.2–1.0]
Phone, %	0.0 [0.0–0.1]	4.0 [1.6–8.1]	1.6 [0.6–3.2]	1.2 [0.5–2.4]	0.8 [0.3–1.5]	0.6 [0.3–1.3]	1.3 [0.5–2.6]	1.0 [0.4–2.1]
Telehealth, %	0.0 [0.0–0.1]	6.0 [2.4–12.0]	2.4 [0.9–4.8]	1.7 [0.7–3.4]	1.1 [0.4–2.1]	0.9 [0.4–1.8]	1.9 [0.7–3.8]	1.5 [0.6–3.1]
Average monthly total ^B , <i>n</i>	31 148 [31 141–31 159]	19 546 [18 843–20 717]	32 116 [31 654–32 887]	35 263 [34 909–35 853]	33 562 [33 347–33 920]	35 295 [35 118–35 589]	28 630 [28 299–29 182]	31 554 [31 266–32 035]

^ATelehealth item numbers introduced 30th March 2020. Abbreviations: *n*, number; Q1, Quarter 1; Q2, Quarter 2; Q3, Quarter 3; Q4, Quarter 4.^BAssuming 5% of Allied Health consultation codes were performed by exercise physiologists (item numbers 93 000, 93 048, 93 537, 93 592, 93 013, 93 061, 93 538, 93 593), range of 2–10% presented in []

the only state/territory to increase in-person service provision during this period, with a 14.8% increase in Q2 2020. Victoria was the only state/territory to have a sustained decreased in-person service provision in Q3 2020, with a 43.9% decline from pre-pandemic levels (Q1 2020). All states/territories reported a decrease in in-person claims in Q3 2021 from Q2 2021, averaging a reduction of 12%.

Fig. 2 illustrates the state/territory changes for in-person EP services relative to February 2020 service provision and state/territory lockdowns. February 2020 was chosen as it is more representative of usual monthly claim rates pre-COVID than January, which is influenced by holiday periods. Besides the Northern Territory, all states/territories decreased relative consultation rate during April–May 2020, with South Australia reporting –179 consultations in April 2020. Generally, states/territories undergoing extended lockdown periods reported decreased service provision rates relative to February 2020 or to the month immediately preceding the announcement. From July to October 2020, Victoria reported relatively fewer in-person EP sessions coinciding with extended lockdowns in the region. Similar patterns can be seen during other extended lockdowns, including New South Wales from June to October 2021 and Victoria from April to October 2021. Queensland was the only state reporting a substantial increase in sessions during a lockdown period in March 2021. However, only a 3-day lockdown was implemented in this period.

Across all Australian states and territories, telehealth adoption was highest in Q2 2020 averaging 3.8 consultations per 100 000 in state population for videoconference and 7.8 for phone (Supplementary Table S3). Victoria represented the only state to increase telehealth claims after Q2 2020, reporting a 33.3% growth for phone from Q2 to Q3 2020. Q3 2021 showed a four-fold increase in phone adoption for New South Wales and 100% rise for Victoria. From Q1 to Q4 2021, on average telehealth represented only 2 consultations per 100 000 (2 phone, 0 videoconference) across Queensland, South Australia, Western Australia, Tasmania, Australian Capital Territory and the Northern Territory.

The trend and changes in costs for MBS EP services are reported in Supplementary Fig. S1. Overall, EP services cost Medicare an estimated AUD17.9M in 2020 and AUD19.8M in 2021. During the first wave of the COVID-19 pandemic in Q2 2020, telehealth reached its peak usage accounting for 6% of the cost of EP services provided by Medicare. Phone accounted for AUD127 271 of the AUD3M total cost in Q2 2020, while videoconference accounted for AUD63 599. By Q4 2021, this reduced to AUD55 073 for phone (1.1% of total quarterly cost) and AUD32 468 for videoconference (0.7%).

Discussion

This study aimed to describe the quantity and cost of in-person and telehealth EP services reimbursed through

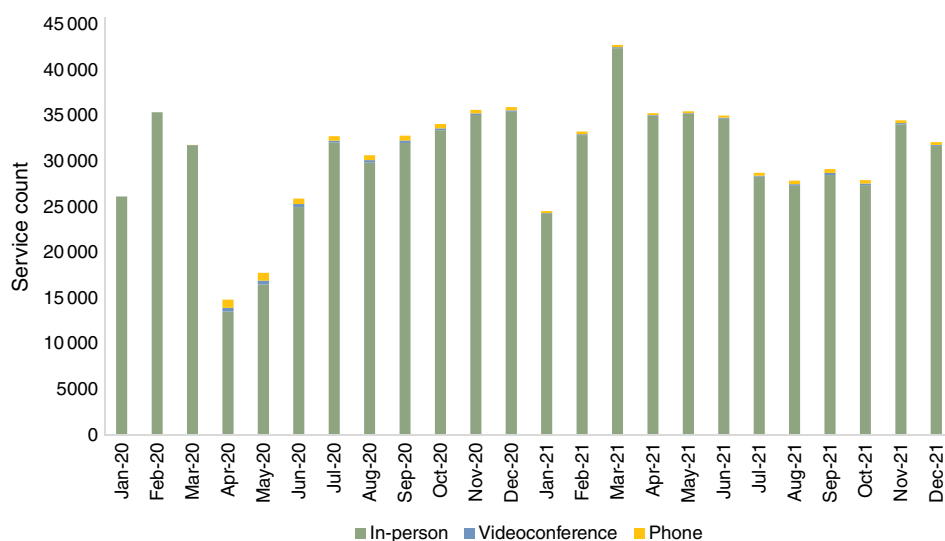


Fig. 1. Monthly claimed exercise physiology services from January 2020 to December 2021, broken down into in-person, videoconference and phone services (assuming 5% of allied health codes were exercise physiology).

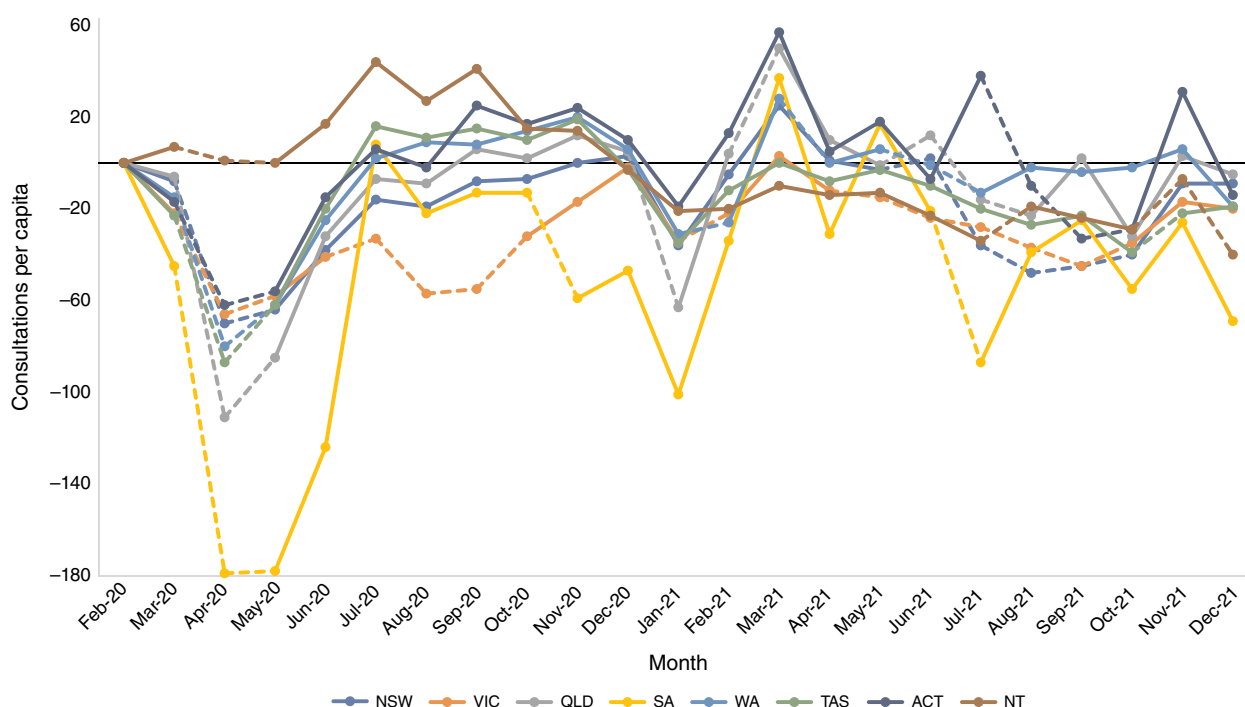


Fig. 2. State consultation rate per capita for in-person Medicare reimbursed exercise physiology services, relative to February 2020 service rate (100 000 state population). Dashed line represents a state lockdown period. Abbreviations: NSW, New South Wales; VIC, Victoria; QLD, Queensland; SA, South Australia; WA, Western Australia; TAS, Tasmania; ACT, Australian Capital Territory; NT, Northern Territory.

the MBS during 2020–21. The main finding was that despite an initial reduction in quantity and cost in Q2 2020 (41% reduction), MBS-reimbursed EP services have remained relatively constant at a national level through the 2-year observation period. Furthermore, uptake of telehealth modalities has been minimal for EP, with in-person delivery being the most common modality across all quarters regardless of public health restrictions. Generally, states undergoing lockdowns reported decreased service provision rates compared

with pre-COVID levels. These findings are consistent with other health professions in the same time period, reporting ~20–40% decrease in services reimbursed through the MBS through Q2 2020.^{16–19} These reductions may have had a detrimental effect on the health of patients requiring these services, and therefore could have important clinical ramifications.

As a result of the COVID-19 pandemic and resulting public health measures, telehealth services have become

integrated into our society and healthcare systems. After the introduction of national telehealth funding, 19% of monthly specialist consultations¹⁷ and up to 34% of general practice appointments¹⁸ were conducted over telehealth modalities in Australia. In light of this, the Australian Government announced that telehealth item numbers were to be continued indefinitely as of January 2022.¹² During Q2 2020, telehealth modalities represented 6% of all EP claims reimbursed through Medicare. However, telehealth could not cover the substantial decrease (41%) in in-person EP CDM claims during this period. Furthermore, from Q2 2020 the rate of telehealth provision decreased to ~1–2% of total claims since Q2 2020 with all states following a similar pattern. Similar trends have been observed in general practice, where telehealth adoption has not been sustained over time.²⁰ Besides psychology and psychiatry services, phone modalities were more utilised than videoconference among health professionals in Australia.^{17,18,21} Victoria and New South Wales saw increased telehealth provision of services during their respective extended lockdowns. The introduction of the telehealth item numbers did not seem to have an appreciable effect on overall MBS expenditure, with rates remaining relatively constant throughout the period despite an initial decrease in Q2 2020. The results indicate that access to MBS telehealth EP services may be an issue, as increasing availability did not result in higher rates of claims. Although it is difficult to contemplate what the ideal uptake of EP telehealth services may be, it would be expected that a considerable portion (e.g. 30–50%) of services would seek to adopt telehealth services. Furthermore, a recent study found that 89% of AEPs implemented telehealth delivery in response to the COVID-19 pandemic, compared to 25% prior.¹¹ This shows an increased desire to adopt telehealth services during the initial stages of the pandemic. However, there are perceived safety concerns from clinicians (such as increased falls risk for clients)²² and reliability of client-led telehealth functional assessments has been questioned.^{22,23} The implementation of telehealth services in response to the pandemic was expedited to align with public health measures. This led to a lack of training in telehealth delivery for practitioners, potentially leading to low uptake of services.²⁴ Although provision has decreased from Q2 2020, telehealth delivery should continue to be encouraged. Telehealth has the ability to reach new patients in need of specialist exercise services, who may have been limited by delivery modality previously. With only 15% of Australian adults meeting physical activity guidelines,² advocacy and adoption of novel approaches to exercise are needed.

The permanent status of the telehealth item numbers is likely to enhance exercise physiology provision by offering multiple modalities of delivery, which may be preferable compared to in-person sessions. However, to date the uptake of telehealth service through the MBS has been minimal for EP, with the highest level of uptake being just 6% of total

claims, falling to just 1–2% following the nation-wide lockdown period. A recent study conducted a retrospective audit of 80 AEPs in Australia for their perspectives and experiences of the implementation of telehealth during the pandemic (specifically in 2020).¹¹ The audit showed that 91% of surveyed AEPs offered telehealth delivery of sessions as an option to patients, with 52% being accepted. AEPs reported that the most common reasons for patients not accepting were personal preference (80%), physical capacity (49%) and access to a reliable telehealth platform (38%).¹¹ However, telehealth acceptance was highest in patients referred through Medicare. When compared with in-person delivery, patients in telehealth sessions were more likely to not complete treatment due to a lack of confidence in the delivery mode and lack of understanding/interest in telehealth technologies.¹¹ However, the client hesitancy towards telehealth identified in this audit may provide a potential reason as to why EP telehealth services were under-utilised. Although this audit may have been prone to selection and recall bias and is non-MBS specific, the findings are important to consider when investigating the validity of MBS telehealth exercise services. Previous literature has suggested that the implementation of exercise-based telehealth technologies can be safe, effective and feasible for patients among various chronic disease cohorts.^{25–27} Additionally, there is good evidence to suggest that telehealth lifestyle interventions are cost-effective when compared to usual care.²⁸ With these results in mind, it should be recognised that AEPs have a role to play in both the uptake and promotion of telehealth modalities for all patients.

For EP telehealth services to remain viable and sustained beyond the pandemic, delivery and administrative structure must align with universal requirements. These requirements include: (i) developing a skilled workforce competent in both the delivery and administrative requirements of telehealth practice; (ii) empowering consumers to advocate for telehealth; (iii) reforming funding to focus on high-value care; (iv) improving the digital health ecosystem, including developing a national information technology infrastructure to support telehealth; and (v) integrate telehealth practice into routine care and clinical workflows.²⁹ Focusing on these requirements, especially as we return to 'business as normal' in the present and future phases of the pandemic, may help to sustain EP telehealth services over the long-term as a viable form of healthcare delivery.

This study has several important limitations to consider. Even though state data has been analysed, local areas and specific population groups were outside the scope of this analysis. Local exercise physiologists are needed for provision of in-person services. Therefore, these are more likely to happen in metropolitan areas where both state and AEP population are likely to be higher. Telehealth services increase accessibility for rural and remote areas. However, it is not possible to determine who received these services based on geographical dispersion. To provide estimates of

EP services only in common allied health telehealth numbers, it was assumed that 5% (2–10%) were claimed by exercise physiologists. Varying this number from 2 to 10% did not have an appreciable influence on the totals, however the assumption should be acknowledged. The data we present is only for MBS related EP sessions. There are many other EP sessions conducted privately, through other government funded agencies or through private health insurers and therefore this study is not reflective of all EP services conducted in the period. The costs we describe are only related to the MBS, and do not represent out-of-pocket payments or gap covering by private health insurers. Additionally, these data do not provide any information about service quality and further research should be conducted to examine the difference between in-person, video-conference and phone care, although there is good evidence that telehealth care is often equivalent in quality.^{30,31}

Conclusion

The provision of EP services claimed through the MBS has remained relatively constant throughout the COVID-19 pandemic. There was minimal uptake for EP telehealth services. The introduction of these item numbers had no appreciable effect on costings for Medicare but is largely limited by low uptake. The minimal uptake of EP telehealth suggests that further research, advocacy and promotion is needed to ensure that telehealth can be a viable option for patients to consider when accessing EP services.

Supplementary material

Supplementary material is available [online](#).

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