Winter 12-10-2023

Telehealth for Maternal Healthcare During the COVID-19 Pandemic in Australia

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Completed Research Paper

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Abstract

The Australian healthcare system faced unprecedented challenges during the COVID-19 pandemic, prompting innovative responses in both pandemic management and routine health services, including maternal and pediatric care. As the pandemic unfolded, telehealth emerged as a pivotal method for delivering safe healthcare services. This study investigates the adoption of virtual care to address the health needs of mothers and infants throughout the COVID-19 period, spanning from March 2020 to December 2022. Through quantitative analyses, the study compares telehealth adoption across various Australian jurisdictions. The findings reveal that face-to-face services remained predominant during the pandemic, yet telehealth services exhibited notable adoption. Telephone services surpassed video conferences in usage. A surge followed by stabilization was observed in antenatal care telehealth services' utilization, indicating a lasting preference even beyond pandemic measures. The integration of virtual care has shown promising benefits, including enhanced access to care, better patient outcomes, and potential cost savings. To optimize virtual care's potential, investments in digital infrastructure, education, training, and comprehensive policies are essential. The study's findings offer strategic insights to enhance antenatal care and address future healthcare challenges both within Australia and beyond.

Keywords: Telehealth, Virtual care, Maternal Health, Pandemic, COVID-19

Introduction

The number of individuals using high-speed Internet globally is predicted to be 5.19 billion, or 64.5% of the world's population (Data Reportal, 2022). This increased use of internet creates an opportunity to improve the use and access to digital healthcare. Maternal or pregnancy is one such area that might be significantly benefitted from this digital healthcare (Wallwiener et al., 2016). Though the use of online or digital health services commenced many years back, it has expanded widely since the coronavirus disease 2019 (COVID-19) pandemic. The emergence of the COVID-19 pandemic placed an unprecedented strain on Australia's healthcare infrastructure, particularly affecting critical services like maternal and pediatric care (Goldfeld et al., 2022; Søreide et al., 2020; Wilson et al., 2022). Consequently, numerous studies have highlighted substantial shifts in healthcare service utilization due to measures such as lockdowns and stay-at-home mandates (Baum and Schwartz, 2020; Hartnett et al., 2020; Salerno et al., 2020), resulting in notable unmet healthcare needs spanning essential interventions like vaccinations to crucial treatments such as cancer care (Baum and Schwartz, 2020; McDonald et al., 2020).

The necessity for adopting telehealth practices became a necessity in early 2020 with the identification of Australia's first COVID-19 case. In rapid response, healthcare providers integrated virtual care methods to ensure the safe delivery of care. Telehealth emerged as a pivotal solution, facilitating remote access to healthcare services (Søreide et al., 2020; Abrams et al., 2022; Services Australia, 2023). Within this transformative landscape, telehealth services for antenatal care were swiftly introduced in Australia to address the requirements of expectant mothers (Australian Institute of Health & Welfare, 2021) though the adoption of these virtual care models was uneven across jurisdictions due to varying lockdown measures and transmission rates. However, beyond the pandemic, telehealth may play a significant role in prenatal health care since it may reach patients in rural locations and overcome other healthcare access challenges (Ferrara et al., 2023). With regard to pregnancy, remote care using telehealth gives expectant women the chance to swap out time-consuming and frequent trips to the clinic or hospital for virtual interactions at a location of their choosing, such as their office or home (Nir et al., 2023). According to various studies, pregnant women are at an elevated risk for various infections such as COVID-19 and others, where women can gain remote care assessment (Capobianco et al., 2020).

In this context, comprehending the sustained utilization of telehealth models beyond the COVID-19 era and their implications on Australia's healthcare systems becomes crucial. This comprehension also extends to evaluating potential impacts on health outcomes for both Australian mothers and infants. Considering that Australia's healthcare system operates within a federal model, the shared responsibilities between federal and state (and territory) governments contribute to a complex landscape (Australian Department of Health and Aged Care, 2023). Moreover, the COVID-19 pandemic provoked federal and state governments to introduce temporary Medicare Benefits Schedule (MBS) items (Australian Government, Department of Health & Aged Care) for antenatal telehealth services (Australian Institute of Health & Welfare, 2021) for the first time in Australia. This approach facilitated flexible jurisdictional responses to the challenges posed by the pandemic. While collaboration existed through the National Cabinet, semi-independent state responses resulted in diverse approaches within healthcare systems (Browne, 2021; Storen and Corrigan, 2020). As part of these temporary provisions, antenatal care telehealth services have continued beyond COVID-19 restrictions in certain jurisdictions. The efficacy of these provisions in improving maternal and infant health outcomes remains a critical area of investigation. Hence, this paper explores how women in Australia adopted to their maternal and infant healthcare through telehealth during the COVID-19 pandemic and after. The paper aims to investigate the following research questions:

i. What is the trend and suitability of telehealth for pregnancy and antenatal care in Australia?
ii. To what extent women used telehealth during COVID-19 in Australia?
iii. What is the possibility that telehealth will be continued in the post pandemic era?

In what follows, we review literature on maternal, infant and other related women related telehealth services in Australia and around the world with respect to acceptance, use and effectiveness. The adopted methodology is presented next, followed by the findings and discussion based on the revealed pattern in the adoption of antenatal care telehealth services in Australia. The paper concludes with the implications of our study.

Literature Review

The Covid-19 pandemic led to a rapid shift to online activities across various sectors, significantly affecting women. Many found themselves shouldering increased caregiving responsibilities due to school and daycare closures, resulting in challenges to their work-life balance (Ashong Elliot et al., 2020; Mukerji et al., 2021; Vardaki et al., 2022) and worsened mental health issues (Thibaut et al., 2020; Basu et al., 2021; Ueda et al., 2022; Jia et al., 2023). Access to essential healthcare and support services was constrained during this time (Richards et al., 2020; Giebel et al., 2021), and instances of domestic violence surged during lockdowns (Williamson et al., 2020; Piquero et al., 2021; Maji et al., 2022).

To enhance the health outcomes for both mothers and children, safe, high-quality, and accessible prenatal and postnatal care are essential (Hu et al., 2023). Due to the growing emergence of information and technology systems, online or digital health services have received much popularity over last few years (Wallwiener et al., 2016). Maternal, infant and other related women health services are becoming available through this online platform. In the literature, many studies have been found in studying the use of online health services for women and maternal health care. Specifically, telehealth and other online services

receive popularity and acceptance after the COVID-19 spike. However, given the recent implementation of virtual care, much of the research conducted within the COVID-19 context both in Australia and overseas has yielded inconclusive results. In the United States (for example), the COVID-19 period witnessed adverse effects on maternal outcomes (Abrams et al., 2022; Gutschow et al., 2021; Salem et al., 2021). Elevated rates of infant and maternal mortality, particularly among marginalized populations (Kingsley et al., 2021; Kumar et al., 2023), prompted discussions about potential links between telehealth services, restricted access to maternal care, and the direct impact of COVID-19.

Several studies have been found discussing the effectiveness and importance of adopting telehealth services during pregnancy. For example, Wei et al. (2023) developed a systematic literature review to evaluate the effectiveness of mobile health services for pregnant women, especially with Gestational diabetes. Their study reveals that, online health services are effective in improving maternal and infant health conditions in patients with gestational diabetes which has significant practical importance. Rasekaba et al. (2018) examined how the use of various health services and the outcomes for both the mother and the fetus were affected by telemedicine-supported gestational diabetes mellitus care. They showed that similar levels of service utilization, clinical results, and economic outcomes could be obtained with innovative technology utilization in gestational diabetes care compared to conventional care methods. Society for Maternal-Fetal Medicine. Healy et al. (2023) presented a detailed review to analyze the quality of health care and patient safety in using telemedicine services for obstetrical care. They provided a summary of the research on the efficacy and safety of telemedicine for prenatal, postpartum, diabetes management, medication abortion, lactation support, hypertension management, genetic counselling, ultrasound examination, contraception, mental health services and postpartum care. Their study reveals that, telemedicine has a number of potential or demonstrated advantages for many of these through increased patient access and happiness, fewer inequities in care delivery, good health outcomes as those of conventional in-person contacts. In a systematic review, Tarhan (2022) evaluated the effectiveness of telehealth interventions in anxiety management during the COVID-19 pandemic. This study demonstrates the successful implementation of telehealth interventions in lowering anxiety levels for pregnant women and other vulnerable people. Buultjens et al. (2023) investigated a hybrid approach to prenatal treatment, including telemedicine and fewer in-person physicals, together with concurrent small-group interdisciplinary education given via video conferencing and extending into the postpartum period. Their study showed that education and assistance may be given online and are likely to help with mental health improvements during pregnancy. Zuo et al., (2022) reported that there is a need for adoption of a less frequent visits, use of tele-medicine technologies to increase communication, and provision of accurate information and knowledge updates can help to ease the3ncreaseed informal caregiving burdens specially during the pandemic time. Borrelli et al., (2023) re-confirmed that midwives here positive about the concept of video-calling in early labour.

In Australia and other countries, telemedicine has been also included in various women health services, such as to standard clinical cystic fibrosis therapy, where geographic barriers, financial burden to accommodate hospital costs etc. inspire patients and families to choose the benefits of telehealth (Shanthikumar et al., 2023). Lazarevic et al. (2023) studied the use and quality of various pregnancy apps available in Australia, for self-monitoring and health care, showing its importance and future development. Palmer et al. (2021) executed a new antenatal care schedule combining telemedicine across all modes of pregnancy care for a large health service in Victoria (Australia) in response to the COVID-19 epidemic. They discovered that their telehealth program delivered about 50% of antenatal consultations via telehealth without affecting the detection and management of common pregnancy complications, such as pre-eclampsia, fetal growth restriction, and gestational diabetes, when compared to conventionally delivered antenatal care. This result revealed the practical implications of telehealth in maternal health care services.

From the various studies discussed above it can be concluded that, digital health services or telemedicine are growing with increased popularity for maternal health care in Australia and worldwide. Therefore, more studies are required to analyze the trend and effectiveness of this service to ensure its improved services.

Methodology

This study conducts a quantitative analysis to investigate the impact of telehealth service utilization on maternal and infant health outcomes. It also explores the adoption of virtual care to address the health needs of mothers and infants during the COVID-19 period. This investigation involves comparing telehealth adoption across different Australian jurisdictions and utilizes data from the Australian Institute of Health

and Welfare (AIHW) National Perinatal Data Collection as well as Services Australia's MBS Item Reports. In Australia, a national wide lockdown was implemented on 23 March 2020. Restrictions began to ease across the country between late April and early May of 2020. Victoria triggered the state to go into a second lockdown on 8 July 2020. Despite high infection rate in November 2021 and the following months, federal and state governments did not introduce new lockdown restrictions. Appendix Figure 1 illustrates the lockdown period followed in metropolitan areas as reported by the Australian Bureau of Statistics (ABS).

Data Collection

For this study, secondary data has been collected from the AIHW (Australian Institute of Health & Welfare, 2021) and MBS Item Reports (Services Australia, 2023). The AIHW Mothers and Babies data is available for three different types of antenatal care services: face-to-face services, telehealth telephone services, and telehealth videoconference services for each jurisdiction on a monthly basis. In Australia, telehealth consultations provide patients with a consultation through video or telephone instead of face to face including three different ways (digitalhealth.gov.au).

i. Remote patient monitoring – monitoring patient health and clinical information at a distance.
ii. Store-and-forward – transmission of images or information from one healthcare provider to another.
iii. Consultations – connection between a patient and one or more healthcare providers through an audio or video-enabled device.

During the COVID-19 pandemic, two types of telehealth services, namely telephone and videoconference, were introduced. Face-to-face data was accessible from 2020 to 2022, whereas telehealth data was exclusively available for 2020. As there was no access to telehealth data for the years 2021 and 2022, the aggregation process was carried out using only the data from 2020. This ensured the creation of annual data for each jurisdiction, as detailed in Table 1 of the Appendix. The datasets concerning mothers and babies across Australia are available from 2013 to 2021 and underwent aggregation on a monthly basis to yield annual data (consult Table 2 in the Appendix for details). The MBS Item Reports dataset, published by Services Australia, was processed from January 2018 to December 2022 for all three antenatal services, including MBS item numbers as provided in Table 3 of the Appendix.

The data utilized for our research is limited in scope and includes variables such as "Number of Deliveries," "States," "Year," and "Type of Service." Importantly, this data isn't linked to individual mothers, ensuring no compromise of confidentiality and privacy. This approach aligns with the AIHW's purpose of providing adaptability while safeguarding sensitive information. Several limitations are intrinsic to the data. The data solely covers services provided by registered healthcare providers and does not encompass services rendered to public patients in public hospitals, which constitute a substantial portion of antenatal healthcare services. The indicated month depends on the processing date, not the actual service date, potentially leading to monthly variations due to differing processing days. The determination of the state and territory is based on the recipient's address, not the location of service provision. Given these constraints and the recent nature of the data, this paper presents a preliminary analysis of antenatal care MBS claims.

Given that virtual care or telehealth was introduced during an ongoing pandemic, data limitations created challenges in establishing significant connections between various variables. Despite these limitations, the study demonstrates evidence of adoption and impact of telehealth on antenatal care during the COVID-19 pandemic and beyond.

Results

In Figure 1, the data on antenatal services specifically pertains to the year 2020, as information regarding telehealth services for the years 2021 and 2022 was not available for each state and territory. This visualization highlights those face-to-face services remained predominant in Australia even during the COVID-19 pandemic. Notably, telephone services exhibited greater utilization compared to video

conferences. The utilization of telehealth services (aggregated telehealth services presented as percentages atop each bar) was most pronounced in Victoria (Vic – 12.2%), while experiencing minimal adoption in the Northern Territory (NT – 2.2%) and Tasmania (Tas – 4.8%).

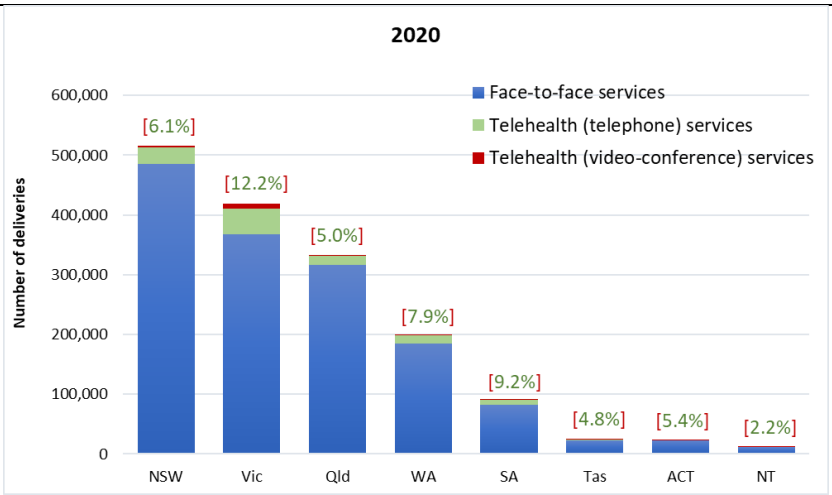

Figure 1. Antenatal care service utilization during the COVID-19 Pandemic (2020)

Figure 2 illustrates the aggregate telehealth antenatal services delivered in Australia spanning the years 2020 to 2022. It is evident from the figure that there was a notable surge in the number of telehealth services offered in 2022 even after the COVID-19 pandemic lockdown. The geographical dispersion of these telehealth antenatal services across various jurisdictions is detailed in Figure 3. With the exception of Victoria, where the adoption of these services was already substantial in 2020, there was a substantial increase in the utilization of these services from 2020 to 2022 in nearly all states and territories.

The cumulative annual count of claims for antenatal care MBS items, spanning from 2018 to 2022, demonstrates a notable level of consistency. However, it's crucial to highlight that the data for the entire year of 2022 is still pending processing and is not yet available for analysis. On a national scale, as indicated in Table 1, the overall count of claims for in-person antenatal care items saw a decrease in the years 2020, 2021, and 2022 when compared to the preceding two years. This decline was offset by the introduction of telehealth MBS items for antenatal care in the year 2020.

Figure 4 illustrates the proportion of antenatal care telehealth items in comparison to the overall antenatal care MBS items claimed from January 1, 2018, to December 31, 2022. It is noteworthy that the quarters with the most prominent percentages of telehealth item claims are the second quarter of 2020 and the first quarter of 2022. During these periods, telehealth items accounted for 11.98% and 11.53% of the total antenatal MBS claims, respectively.

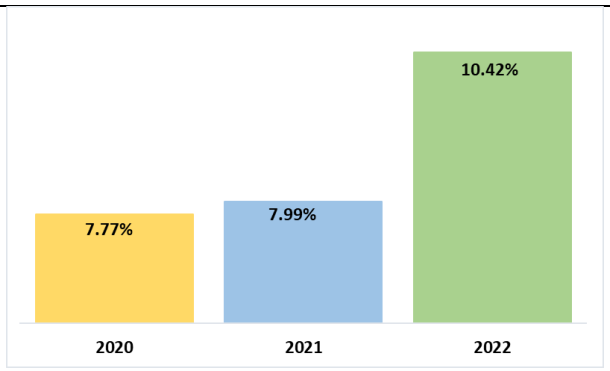

Figure 2. Aggregate telehealth antenatal care services in Australia

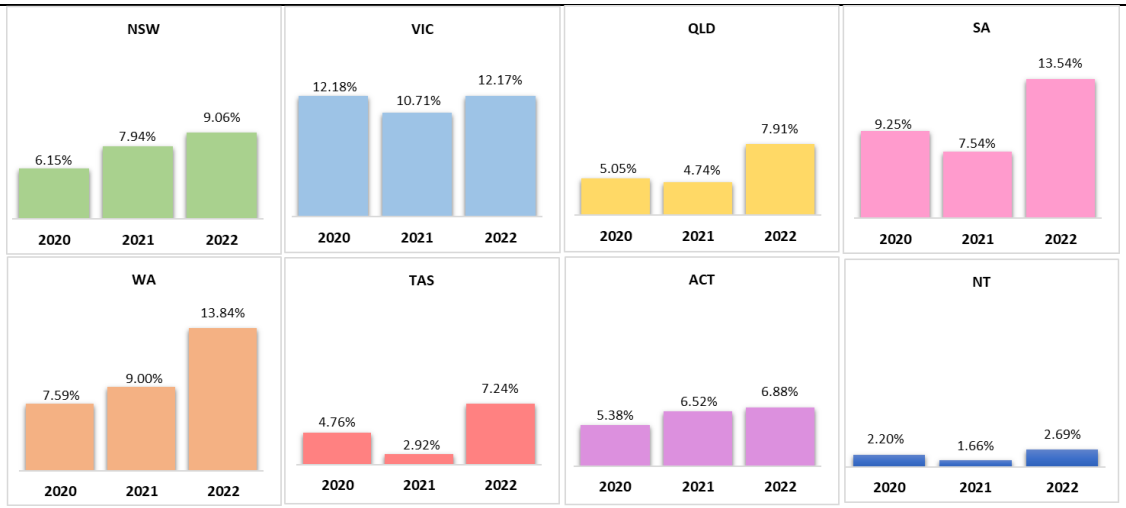

Figure 3. Telehealth care services distribution across jurisdictions

Year	Face to Face	Telehealth – Videoconference	Telehealth – Telephone	Total
2018	1,617,456	-	-	1,617,456
2019	1,628,011	-	-	1,628,011
2020	1,492,398	15,703	110,105	1,618,206
2021	1,518,190	14,155	117,689	1,650,034
2022	1,349,861	16,730	140,324	1,506,915

Table 1. Aggregate claims for antenatal MBS items during the period 2018-2022

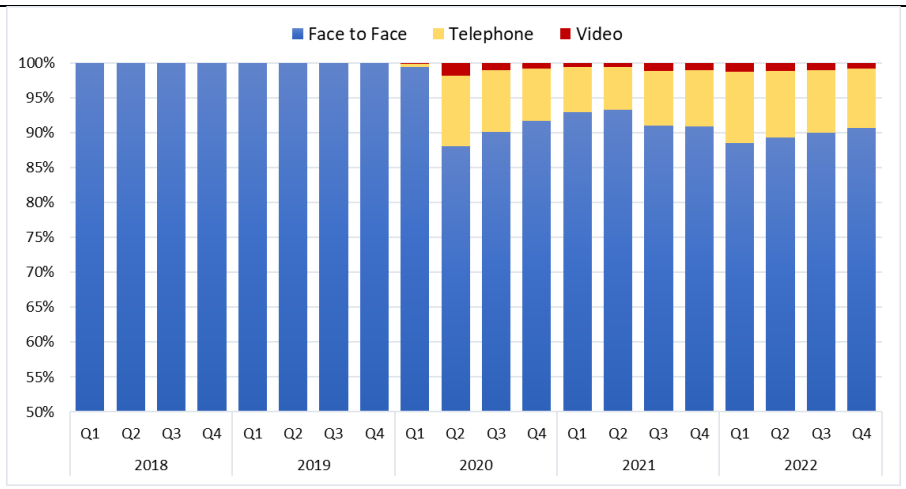

Figure 4. Telehealth antenatal care items as a percentage of total claims (2018-2022)

The second quarter of 2020 coincided with the initial stage of Australia's response to the COVID-19 pandemic, characterized by the enforcement of rigorous public health measures, border closures, lockdowns, and limited access to vaccination. Conversely, the first quarter of 2022 experienced a rise in infections following the conclusion of nationwide lockdowns in the fourth quarter of 2021, alongside the easing of self-isolation mandates. Although these occurrences provide context for the upsurge in telehealth claims, further investigation is essential to identify the fundamental causal factors. Upon reviewing Figure 5 for the second quarter of 2020 (see Table 4 in the Appendix for details), a conspicuous decrease in the count of face-to-face antenatal care MBS items claimed across various jurisdictions becomes apparent. Particularly noteworthy is the substantial reduction in claims documented in New South Wales and Victoria for the year 2020 when compared to 2019. This decline could potentially be correlated with the elevated instances of COVID-19 infections prevalent in these regions (Australian Government Department of Health, 2020). The most significant reduction in face-to-face services occurred during the second quarter of 2020. Subsequent to this decline, a short-lived rebound was noted, followed by a stabilization of face-to-face services as the pandemic unfolded, albeit at levels below those observed in the pre-pandemic years. Importantly, the federal government has indicated the intention to maintain the originally temporary antenatal care telehealth MBS items (Australian Government Department of Health, 2022). This implies the potential for the observed trend to extend into the future, as patients continue to opt for telehealth alternatives.

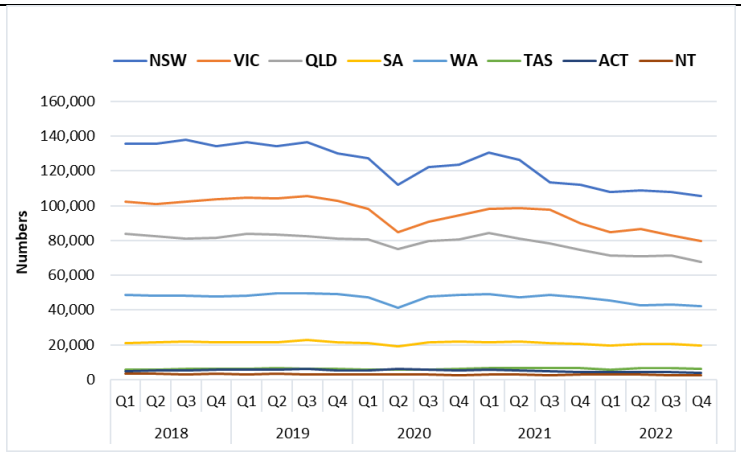

Figure 5. Temporal patterns in face-to-face antenatal care MBS item utilization

Analyzing the proportions of telehealth antenatal MBS items claimed in comparison to the overall antenatal MBS items, a noticeable divergence becomes evident among various states and territories (refer to Figure 6). Significantly, regions with lower adoption rates of telehealth antenatal care, like the Northern Territory and Tasmania, also exhibited lower incidences of COVID-19 infection throughout the duration of the pandemic. In contrast, Victoria consistently demonstrated a notable proportion of telehealth claims for antenatal care, which correlates with the extended periods of lockdown it experienced. Particularly noteworthy is the peak observed in the third quarter of 2020, which aligns with the second wave of COVID-19 infections and the simultaneous enforcement of stringent public health measures during that timeframe. The data highlights a noteworthy trend indicating a heightened uptake of antenatal telehealth services in states with comparatively lower rates of COVID-19 infection compared to other areas. South Australia and Western Australia emerge as prominent illustrations. Specifically, South Australia exhibited the most pronounced utilization of antenatal telehealth services under the MBS, particularly during peak intervals. This usage peaked at 17.69% during the second quarter of 2020 and at 15.46% during the first quarter of 2022. Likewise, Western Australia, which implemented rigorous border closures and quarantine regulations throughout the pandemic, showcased a prevalence in the adoption of telehealth services when contrasted with other regions.

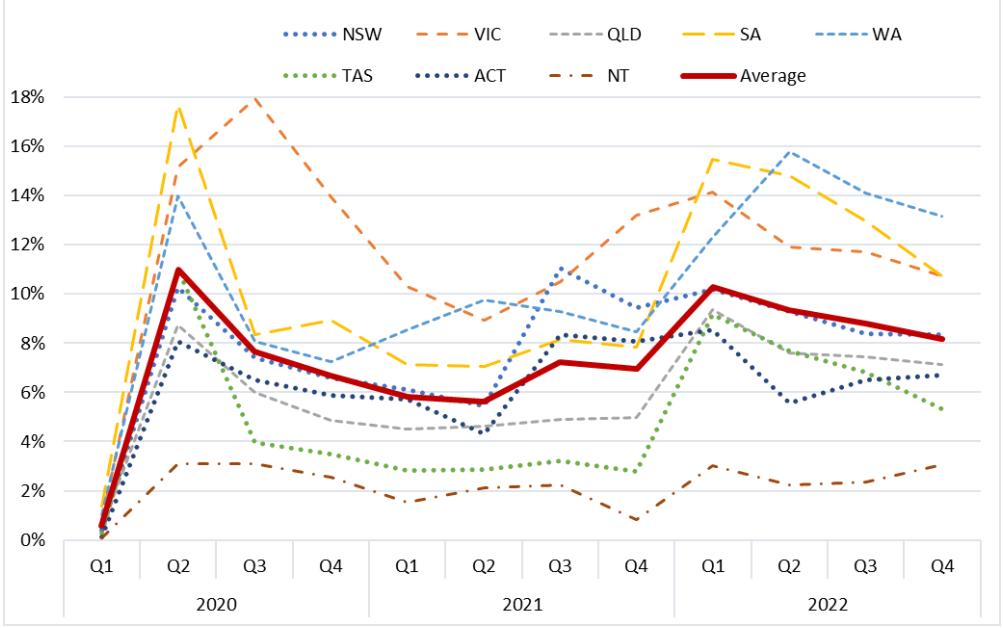

Figure 6. Telehealth antenatal care MBS item proportions across different state and territory jurisdictions

Figure 7 provides a visual representation of the percentage change in claimed antenatal telehealth items compared to total antenatal care MBS items claimed. The timeline for this analysis spans from January 1, 2018, to December 30, 2022, with data organized by state and territory. It's essential to conduct further research to explore the driving forces behind these trends. One plausible explanation could be linked to the implementation of prudent public health strategies designed to mitigate the risk of infection in these specific jurisdictions.

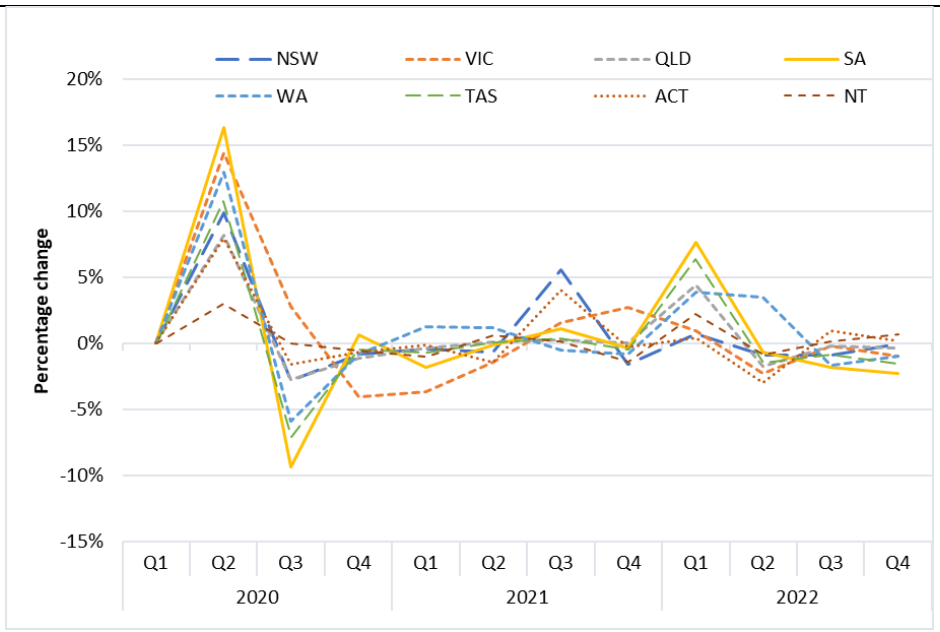

Figure 7. Percentage change in antenatal telehealth items by state and territory (2018-2022)

Discussion

The data from the MBS reveals a how telehealth is used by Australian clinicians, mothers, and infants to the diverse circumstances posed by COVID-19 outbreaks and public health interventions. The initial stages of the pandemic witnessed a surge in the utilization of antenatal care telehealth services, followed by a subsequent stabilization in service usage. This adoption reflects the resilience of healthcare systems and the willingness of both healthcare providers and patients to embrace innovative modes of care delivery (Kanozia and Mythraye, 2021; Quinn et al., 2021). The most significant insight from the data is the persistent adoption of antenatal care telehealth services even after the cessation of lockdowns and public health measures. This underscores a continued preference among a segment of healthcare providers and/or patients for telehealth over conventional face-to-face services.

While the MBS data provides insights into the trends within antenatal care services, it represents only a preliminary phase of analysis. Given the data's recency, it remains impractical to discern extended-term trends or predict the potential utilization of antenatal care telehealth services outside the pandemic context at this juncture.

To better understand the driving forces behind the jurisdictional adoption of telehealth, further analysis is indispensable. These forces may encompass a multitude of factors, ranging from patient-driven care preferences and clinician-driven inclinations to jurisdictional health policies and responses to COVID-19 outbreaks. Delving into jurisdictional implementation of telehealth policies and exploring the extent of telehealth services' impact on the health outcomes of mothers and their infants would be valuable areas for subsequent research endeavors.

The presented resul's underscore the widespread adoption of virtual care for maternal and child health services during the COVID-19 pandemic. Virtual care emerged as a vital tool at national, international, and state levels, facilitating the delivery of crucial health services to expectant mothers and infants. This adoption brought forth several benefits, including convenience, significant time-savings and travel costs (Donaghy et al., 2019). However, challenges such as technological barriers, privacy concerns, and disparities in access to virtual care were also noted (Mohammed et al, 2021).

The introduction of virtual care has been instrumental in overcoming challenges imposed by social distancing policies, travel restrictions, and reduced in-person healthcare visits. It has enabled secure and

practical healthcare access for mothers and infants. Nevertheless, challenges related to technology access, digital literacy, and equitable virtual healthcare access persist. Regulatory hurdles and the absence of reimbursement guidelines pose obstacles to the long-term adoption and sustainability of virtual care. In rural and isolated areas, inadequate infrastructure hampers the implementation of virtual care.

Conclusion

This study focused on exploring the use of telehealth in maternity and antenatal care, which is considered as a very important medical care sector in Australia. Throughout the pandemic period, face-to-face services remained predominant in Australia. Telephone services exhibited higher usage compared to video conferences, and while telehealth services received minimal adoption, there were exceptions in the Northern Territory (NT) and Tasmania (TAS). Concurrently, an upward trajectory in the number of deliveries was apparent across most states between 2019 and 2021, as evidenced by data spanning from 2013 to 2021.

An in-depth exploration of MBS item reports revealed a distinct pattern in the adoption of antenatal care telehealth services. Initially, there was a surge in their utilization as the pandemic unfolded, followed by a stabilization of service usage. This consistent trend suggests a lasting preference among a subset of healthcare providers and/or patients for telehealth options, even after the easing of lockdowns and public health measures.

Despite challenges posed by technology access and proficiency among both patients and healthcare professionals, the integration of virtual care into maternal and pediatric healthcare has emerged with great extent. These include heightened access to care, improved patient outcomes, and potential cost savings for healthcare systems. This research identified the increased trend of using telehealth in maternal and infant health care in Australia during COVID-19 and afterwards, anticipating a significant use of this service in future. In essence, this research underscores virtual care's pivotal role in ensuring maternal and pediatric health services during the pandemic. The insights gleaned from this study hold valuable implications for policymakers, healthcare providers, and researchers in planning and implementing future healthcare service deliveries. As virtual care continues to evolve beyond the pandemic, addressing challenges and enhancing accessibility will be crucial in harnessing its potential for improved maternal and child health outcomes.

To further harness the potential of virtual care, investments in digital infrastructure are crucial. Equally important are targeted education and training initiatives for both patients and healthcare professionals, ensuring seamless adoption and effective utilization of telehealth services. The formulation of comprehensive policies and regulatory frameworks can also play a pivotal role in shaping the future of virtual care in healthcare delivery.

As demonstrated by its resilience during the pandemic, telehealth holds the promise of becoming an essential component of healthcare delivery, particularly for patients facing physical or access-related limitations. By nurturing the growth of virtual care, healthcare systems can enhance their capacity to provide equitable and efficient services, thus elevating the overall quality of care for mothers and their infants. Considering the importance of telehealth in today's digitized world, this research could be extended in future to explore the use of various digital health services for other patients in Australia and worldwide.

Acknowledgements

We would like to acknowledge the capstone project (ITS Capstone Project, Group ID: 11522-23-20) group, led by a team consisting of Kezang Choden, Sadmim Rahman, Gonglue (Gary) Gao and Simone Proctor.

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Appendix

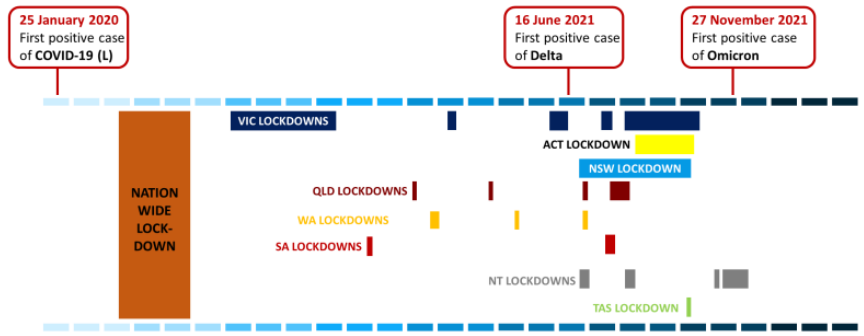

Figure 1. Lockdown period followed in metropolitan areas as reported by the Australian Bureau of Statistics (ABS).

State/Territory	Face-to-face services	Telehealth (telephone) services	Telehealth (videoconference) services
New South Wales (NSW)	484607	27983	3746
Victoria (VIC)	367779	42969	8031
Queensland (QLD)	315986	15059	1739
Western Australia (WA)	184849	13904	1273
South Australia (SA)	82900	7861	585
Tasmania (TAS)	22947	904	244
Australian Capital Territory (ACT)*	22125	1198	60
Northern Territory (NT)*	11205	227	25

* Australian Capital Territory (ACT) and Northern Territory (NT) are the two mainland territories of Australia.

Table 1. Overview of the total number of antenatal care service deliveries during 2020

Year	NSW	VIC	QLD	WA	SA	TAS	ACT	NT
2013	96968	78349	63157	34404	20263	6021	6264	4061
2014	97319	79142	63811	35205	20749	5892	6452	3975
2015	96385	79295	61888	34983	20154	5693	6480	4009
2016	98709	80882	62758	35890	20062	5920	6582	4011
2017	95807	79771	60314	34546	19485	5581	6314	3849
2018	95545	78909	60483	33427	19333	5516	6041	3775
2019	94042	78146	60034	32841	19036	5577	6096	3733
2020	92539	77382	59584	32255	18738	5637	6151	3690
2021	99309	81780	63383	34676	-*	6081	6458	-*

* Missing data: Data was not available for both South Australia (SA) and Northern Territory (NT) at the time of download from the relevant site.

Table 2. Total number of deliveries (including all types of births) from 2013 to 2021

Medicare Benefits Schedule Item	**Face to Face**	**Telehealth - Videoconference**	**Telehealth – Telephone**
		Introduced 13 March 2020 due to COVID-19 pandemic	
Antenatal Service provided by a Nurse, Midwife or an Aboriginal and Torres Strait Islander health practitioner on behalf of, and under the supervision of, a medical practitioner provided at or from a regional, rural or remote area.	16400	91850	91855
Antenatal Attendance (medical practitioner)	16500	91853	91858
Planning and management of a pregnancy, by a medical practitioner, if the pregnancy has progressed beyond 28 weeks' gestation and the service includes a mental health assessment of the patient (including screening for drug and alcohol use and domestic violence). Claimable once per pregnancy.	16590, 16591	N/A	N/A
Antenatal Professional Attendance by a participating midwife	82100, 82105, 82110	91211, 91212	91218, 91219

Table 3. Summary of Medicare Benefits Schedule (MBS) Items for antenatal care

Year	Quater	NSW	VIC	QLD	SA	WA	TAS	ACT	NT
2018	Q1	135,816	102,227	83,922	21,024	48,762	5,469	4,927	3,493
	Q2	135,543	100,908	82,298	21,265	48,317	5,680	4,995	3,335
	Q3	137,870	102,404	80,834	21,912	48,089	6,181	5,296	2,938
	Q4	134,315	103,881	81,440	21,424	47,828	6,276	5,620	3,167
2019	Q1	136,687	104,430	83,684	21,491	48,342	5,919	5,516	2,936
	Q2	134,008	104,117	83,423	21,512	49,711	6,378	5,572	3,210
	Q3	136,458	105,589	82,515	22,707	49,825	6,088	5,938	3,063
	Q4	130,234	102,859	81,168	21,256	49,002	6,164	5,170	3,039
2020	Q1	127,100	98,044	80,444	20,808	47,097	5,866	5,165	2,900
	Q2	**111,921**	**84,571**	**75,196**	**18,966**	**41,092**	**5,548**	**6,120**	**2,855**
	Q3	122,070	90,706	79,736	21,230	47,953	5,559	5,575	2,887
	Q4	123,516	94,458	80,610	21,896	48,707	5,974	5,265	2,563
2021	Q1	130,319	98,318	84,337	21,591	49,024	6,378	5,523	2,969
	Q2	126,171	98,485	80,923	21,677	47,519	6,515	5,174	2,729
	Q3	113,521	97,718	78,147	21,151	48,827	6,662	4,554	2,439
	Q4	111,811	89,978	74,681	20,240	47,270	6,372	4,351	2,816
2022	Q1	108,049	84,518	71,495	19,600	45,352	5,898	4,463	3,034
	Q2	108,597	86,609	70,763	20,259	42,571	6,471	4,066	2,767
	Q3	107,671	82,861	71,250	20,437	43,060	6,422	4,200	2,247
	Q4	105,354	79,762	67,622	19,659	42,362	6,292	3,595	2,555

Table4. Temporal patterns in face-to-face antenatal care MBS item utilization