Pediatric Conditions and Platforms of Telemedicine Used in Philippine Primary Care: A Cross-sectional Study

Angelique Celina F. Lahoz, MD,[1] Leonila F. Dans, MD, MSc,[1] Carol Stephanie C. Tan-Lim, MD,[2] Angelica Cecilia V. Tomas, MD,[1] Cara Lois T. Galingana,[3] Josephine T. Sanchez,[3] Maria Rhodora N. Aquino,[3] Arianne Maever L. Amit,[3] Mia P. Rey, PhD,[4] Janelle Micaela S. Panganiban[3] and Antonio L. Dans, MD, MSc[3,5]

[1]*Department of Pediatrics, Philippine General Hospital, University of the Philippines Manila*
[2]*Department of Clinical Epidemiology, College of Medicine, University of the Philippines Manila*
[3]*Philippine Primary Care Studies, Center for Integrative and Development Studies, University of the Philippines Diliman*
[4]*Department of Accounting and Finance, Cesar E.A. Virata School of Business, University of the Philippines Diliman*
[5]*Institute of Clinical Epidemiology, National Institutes of Health, University of the Philippines Manila*

ABSTRACT

Background and Objective. Inequity in access to healthcare continues to be a problem in the Philippines. This was further aggravated by the COVID-19 pandemic. Telemedicine is considered a potential strategy to address inequitable access to healthcare; however, it only gained popularity during the pandemic. This study aims to determine the pediatric conditions diagnosed through telemedicine consults and the platforms utilized by patients in the Philippine Primary Care Studies pilot sites during the pandemic.

Methods. This is a cross-sectional study of pediatric patients below 19 years of age who sought consult using telemedicine. Using the electronic medical records (EMR) system adapted by the Philippine Primary Care Studies in UP Health Service (UPHS) Quezon City, Metro Manila (urban site), Samal, Bataan (rural site), and Bulusan, Sorsogon (remote site), pediatric conditions diagnosed through telemedicine consults and the platforms utilized by patients from September 2021 to August 2022 were extracted and summarized. Data was summarized using descriptive statistics.

Results. A total of 5,388 consults involving pediatric patients were recorded from September 2021 to August 2022, of which 1,562 (29.0%) were done through telemedicine. Majority of the telemedicine consults (67.5%, n=1,055) were in the rural site. There were 274 telemedicine consults (17.6%) in the remote site, and 233 (14.9%) in the urban site. The most common diagnosis was acute upper respiratory tract infection (30.8%). Other common conditions diagnosed through telemedicine were lower respiratory tract infections, skin infections, urinary tract infections, obesity, anxiety disorders, allergic rhinitis, conditions related to pregnancy, and myalgia. The most common platforms used by patients are video calls (20.2%, n=315) and voice calls (18.4%, n=287) across all three sites. However, the most common platform differed per area—video calls for the urban site (85.8%), live chat for the rural site (76.1%), and voice calls for the remote site (60.6%).

Conclusion. The most common condition diagnosed among pediatric patients consulting through telemedicine is upper respiratory tract infection. The most common platforms used to seek consult through telemedicine are live chat, video calls, and voice calls, with differences noted per site.

Keywords: telemedicine, pediatric diseases, platform, primary care

CC BY NC ND

Paper presentation - PGH Visual Abstract Contest (Resident's Observational Study Category) Advancing Research through Collaboration PGH Research Week 2022, October 17, 2022, via Zoom.

eISSN 2094-9278 (Online)
Published: August 30, 2024
https://doi.org/10.47895/amp.vi0.8458

Corresponding author: Angelique Celina F. Lahoz, MD
Department of Pediatrics
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000, Philippines
Email: angeliquelahoz@gmail.com
ORCiD: https://orcid.org/0009-0005-7098-8258

INTRODUCTION

In the Philippines, classifications for barangays are set by the Philippine Statistics Authority and consist of three classifications. The first, urban, is defined as a barangay with: (1) a population size of 5000 or more with at least one establishment with a minimum of 100 employees, or (2) has five or more establishments with a minimum of 10 employees, or (3) five or more facilities present within the barangay or within a two-kilometer radius from the barangay hall. Second is rural, in which the barangay does not qualify to any of the three classifications for urban.[1] The third is remote, which is defined as a barangay with limited access to basic health services due to either physical or socio-economic factors.[2]

Inequity in healthcare access and delivery is evident in the Philippines. Hospitals are concentrated in the National Capital Region. The nationwide doctor to patient ratio is low, and there are several geographically isolated and disadvantaged areas (GIDAs).[3]

Telemedicine is defined as "the use of electronic information and communications technologies to provide and support healthcare when distance separates the participants."[4] It is used for several purposes: (1) for direct medical delivery that allows patients to get medical care at their convenience with less delays, (2) for educational application providing a two-way flow of information from the academe and the communities, and (3) for applications in community research to assess the healthcare needs of different communities.[5] Telemedicine is considered a potential strategy to address inequitable access to healthcare; however, it only gained popularity during the COVID-19 pandemic.[4]

The COVID-19 pandemic caused disruptions in healthcare services and delivery. In order to control and prevent further transmission of the virus, there was restriction in mobility within communities. Hospitals also limited admissions to patients with COVID-19 symptoms. Patients were advised to limit consultations in hospitals unless they had conditions requiring urgent care.[6,7] To adapt to these changes, the use of telemedicine to provide healthcare for patients with non-urgent health concerns became common.[8]

Telemedicine's strongest advantage for the pediatric population is its ability to provide better access to healthcare services to underserved communities.[9] In a study by Marcin et al., telemedicine facilitates access to specialty and subspecialty services in rural communities. Patients also save time since they are able to see more doctors faster.[10] Telemedicine also lowers healthcare-associated expenditures for patients due to removal of travel costs and travel time; thus, minimizing lost work opportunities for parents and caregivers.[11] Studies on the impact of telemedicine in primary care showed favorable outcomes, including: 9% decrease in office visits, improvement in tracking of appointment schedules, improved referral system, better tracking of medication errors with consequent management of complications, and improved follow-up rate from appointment rate.[8]

With the COVID-19 pandemic, the advantages of telemedicine in providing dependable and quality pediatric health care was highlighted. At the height of the pandemic, telemedicine allowed for continuous health care delivery while minimizing exposure to infectious patients and relieving the difficulty of traveling with children.[12] In the 2020 study of Chandler et al. on the current practice of telemedicine in the United States, the most common diagnoses seen via telemedicine were acute respiratory illnesses, followed by dermatologic infections, and gastrointestinal problems.[9]

The Philippine Primary Care Studies (PPCS) is a program initiated in 2016 to address the current problems of our health care system, one of which is inequity in healthcare access. This program tested several strategies that aim to improve primary care delivery. The program involved three study sites, namely: the University of the Philippines Health Service (UPHS) in Diliman, Quezon City as the urban site, Samal, Bataan as the rural site, and Bulusan, Sorsogon as the remote site. The remote site is classified as a geographically isolated and disadvantaged area (GIDA). These three study sites were chosen to represent the different barangay classifications in the country and to assess their differences in health care access. One strategy that was implemented was the customized electronic medical records (EMR) system for all three sites. When the COVID-19 pandemic affected the Philippines, the PPCS also facilitated telemedicine consults for patients. Through the introduction of telemedicine, patients were able to consult via new platforms such as live chat, video call, and voice call.

This study aims to determine the pediatric conditions diagnosed through telemedicine consults and the platforms utilized by patients in the Philippine Primary Care Studies pilot sites by reviewing the EMR from September 2021 to August 2022. Specifically, it aims to determine the proportion of pediatric consults that used telemedicine, to describe the demographic profile of pediatric telemedicine users, and to determine the common pediatric diseases seen via telemedicine. This study will provide information on the practice of telemedicine in the country. Results of this study may be used to guide policies on the use of telemedicine in various primary care settings in order to maximize the potential advantages of telemedicine consultation.

METHODS

Study Design

This is a cross-sectional study using data from the EMR of the three PPCS pilot sites. All pediatric patients less than 19 years old who sought consult via telemedicine at the urban, rural, and remote primary care facilities from September 2021 to August 2022 were included in this study (total enumeration). There were 11 physicians in the urban site, four physicians in the rural site, and three physicians in the remote site.

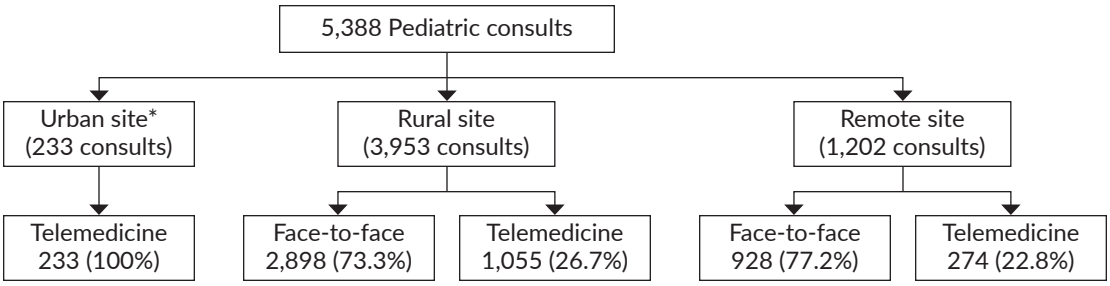

Figure 1. Pediatric consults from September 2021 to August 2022 in the three sites.

** No face-to-face consultations were done in the urban site due to the pandemic. Only emergency cases were accommodated for face-to-face consults.*

Study Procedure

Data was encoded in the EMR in real time by the healthcare workers of the three primary care sites. Data of pediatric patients who consulted via telemedicine either by voice call, video call, short message service (SMS), live chat, or email were extracted by the PPCS data management team. Voice calls refer to consultations done via spoken communication using a telephone or a cellphone. Video calls refer to consultations done via spoken communication with the person using a cellphone's or computer's camera and screen. SMS refers to written communication using a cellphone. Emails refer to the exchange of computer-stored messages from one user to another via the internet.[12] Live chat refers to consultations via written communication using the internet in real time.

Raw data extracted from the electronic database, including sex, age, address, diagnosis, and platform used for telemedicine, was migrated to Microsoft Excel. The filter function of Microsoft Excel was then used to extract the necessary information. Missing data was recorded as "not reported." The same data source and assessment method was used for all three sites. The identity of subjects was known only to the data manager and was kept anonymous to the investigators and data analyzers.

Data Analysis

Data was presented through descriptive statistics. Categorical variables were described using frequencies and percentages. Continuous variables including age and distance from health facility were described using means and standard deviation (SD). Tables were used to summarize the demographic profile of subjects based on sex, age group, distance from health facility (barangay), diagnosis, and platform used for telemedicine (voice call, video call, SMS, email, or live chats) for each of the three sites.

Ethical Considerations

This study was conducted under the Philippine Primary Care Studies, which was granted clearance by the University of the Philippines Manila Research Ethics Board (UPMREB) with study protocol code UPMREB 2015-489-01. This study was done as one of the performance indicators for utilization rates and knowledge of primary care providers. Full anonymity of subjects was ensured by assigning unique numeric identifiers to the subjects. The data was stored in the principal investigator's password protected laptop and was accessible only to the principal investigator.

RESULTS

A total of 5,388 pediatric patient consults were recorded from September 2021 to August 2022, of which 1,562 (29.0%) were done through telemedicine. Majority of the telemedicine consults (67.5%, n=1,055) were in the rural site. There were only 274 telemedicine consults (17.6%) in the remote site, and 233 (14.9%) in the urban site. The number of pediatric consults is shown in Figure 1.

There were slightly more male pediatric patients (51.8%) who consulted through telemedicine in all three sites. In the urban site, most of the pediatric consults belonged to the adolescent age group (88%). The mean age of the patients was 16.6 years (SD 5.37). In the rural and remote sites, majority of the consults belonged to the early childhood age group (1 to 4 years old). The mean age of the patients in the rural site was 6.2 years (SD 4.6). In the remote site, the mean age was 6.9 years (SD 5.5). The demographic characteristics of telemedicine pediatric patients is shown in Table 1.

The Rural Health Unit in Samal, Bataan caters to 14 barangays. The average distance of the barangays from the health facility is 3.8 kilometers, with a range of 1.1 to 13 km. The average number of pediatric patients seen via telemedicine per barangay was 75 patients. The highest numbers of pediatric patients seen via telemedicine came from Barangay San Juan (16.9%), Sapa (12.4%), and Gugo (10.7%).

The health facility in Bulusan, Sorsogon caters to 24 barangays. The average distance of the barangays from the health facility is 3.7 kilometers, with a range of 0.3 to 10.9 km. The average number of pediatric patients seen via telemedicine per barangay was 11 patients. The highest numbers of pediatric patients seen via telemedicine came from Barangay Dapdap Poblacion (17.2%) and San Vicente (Buhang) (17.2%).

Table 1. Demographic characteristics of telemedicine pediatric patients in the three sites

	Urban Site (n=233) n (%)	Rural Site (n=1,055) n (%)	Remote Site (n=274) n (%)	Total for all 3 sites (n=1,562) N (%)
Sex				
Female	114 (48.9)	506 (48.0)	133 (48.5)	753 (48.2)
Male	119 (51.1)	549 (52.0)	141 (51.5)	809 (51.8)
Age Group				
Infancy (<1 year old)	3 (1.3)	145 (13.8)	50 (18.3)	198 (12.7)
Early Childhood (1-4 years old)	3 (1.3)	443 (42.0)	106 (38.7)	552 (35.3)
Middle Childhood (5- 9 years old)	22 (9.4)	266 (25.2)	56 (20.4)	344 (22.0)
Adolescence (10-18 years old)	205 (88.0)	201 (19.0)	62 (22.6)	468 (30.0)

Table 2. Geographic Distribution of Telemedicine Pediatric Patients in the Rural and Remote Sites

Rural Site (n=1,055)		
Barangay	Distance to RHU (in km)	N (%)
*East Daang Bago	0.0	25 (2.4)
West Daang Bago	1.1	19 (1.8)
San Roque	1.5	36 (3.4)
Sapa	1.7	131 (12.4)
Ibaba	1.8	86 (8.1)
Santa Lucia	1.9	80 (7.5)
Lalawigan	2.0	82 (7.8)
West Calaguiman	2.0	43 (4.1)
East Calaguiman	2.3	101 (9.6)
Tabing Ilog	2.8	85 (8.1)
San Juan	3.1	178 (16.9)
Gugo	6.8	113 (10.7)
Imelda	9.7	46 (4.4)
Palili	13.0	30 (2.8)

Remote (n=274)		
Barangay	Distance to RHU (in km)	N (%)
*Central Poblacion	0.0	1 (0.4)
Sapangan Poblacion	0.3	4 (1.5)
Looban Poblacion	0.5	0 (0.0)
Sabang Poblacion	0.5	11 (4.0)
Mabuhay Poblacion	0.8	4 (1.5)
Poctol Poblacion	0.9	1 (0.4)
Dapdap Poblacion	1.1	47 (17.2)
Madlawon Poblacion	1.2	16 (5.8)
Tinampo	1.8	14 (5.1)
San Francisco (Kapangihan)	1.8	10 (3.6)
San Rafael (Likod)	2.0	23 (8.4)
San Jose	2.4	12 (4.4)
Dancalan Poblacion	3.9	22 (8.0)
Porog	4.0	4 (1.5)
San Bernardo	4.8	17 (6.2)
Cogon	5.1	9 (3.2)
San Isidro	5.4	11 (4.0)
San Roque	6.0	8 (2.9)
San Vicente (Buhang)	6.5	47 (17.2)
Bagacay	7.8	5 (1.8)
Salvacion	8.3	2 (0.7)
Santa Barbara	10.1	2 (0.7)
San Antonio	10.2	1 (0.4)
Lalud	10.9	3 (1.1)

RHU – rural health unit
**Location of health facility*

The urban site, UPHS, caters to university-based students and employees.

The geographic distribution of telemedicine patients in the rural and remote sites are summarized in Table 2.

Upper respiratory tract infection was the most common diagnosis across all three sites. In the rural and remote sites, infectious conditions were the second to fifth most common diagnoses (urinary tract infections, skin infections, lower respiratory tract infections). In contrast, the other common diagnoses in the urban site include coronavirus infection, allergic rhinitis, bronchial asthma, and anxiety disorders. The top 5 most common diagnoses per site is shown in Table 3. Other disease entities managed using telemedicine include chronic diseases like obesity, diseases related to pregnancy, and nonspecific diseases like myalgia.

Table 4 shows the most common platforms used by patients who consulted via telemedicine. The results varied by site. The most common platform used was live chat through Facebook Messenger (76.1%) for the rural site, video call (85.8%) for the urban site, and voice call (60.6%) for the remote site. Across all three sites, the most common platform used was live chat (51.4%), driven by the high number of patients consulting via this platform in the rural site. However, there were no patients who consulted via live chat in the urban and remote sites. The second and third most common platforms used were video calls and voice calls, respectively. These two platforms were utilized in all three sites.

DISCUSSION

This study, conducted one year into the start of the pandemic, showed 29% telemedicine usage rate in primary care for pediatric consults. A wide range of conditions was diagnosed through telemedicine consults, with infectious diseases being the most common type. Various telemedicine platforms were used, with the most common platform used varying per area.

Table 3. Most Common Diagnoses of Telemedicine Pediatric Patients in the Three sites

No.	Urban Site (n=233)		Rural site (n=1,055)		Remote Site (n=274)	
	Diagnosis	N	Diagnosis	N*	Diagnosis	N
1	Upper Respiratory Tract Infections	15	Upper Respiratory Tract Infections	966	Upper Respiratory Tract Infections	64
2	Coronavirus Infection	7	Urinary Tract Infection	121	Lower Respiratory Tract Infections	56
3	Allergic Rhinitis	7	Impetigo	115	Impetigo	29
4	Anxiety disorder	7	Acute Tonsillitis	52	Urinary Tract Infection	26
5	Bronchial asthma	5	Cellulitis	51	Infected Wound	25

N – number of cases
**There is a discrepancy between the total number of diagnoses and total patients seen per site due to some patient having multiple diagnosis*

Table 4. Telemedicine Platforms Used in the Three sites

Platform	Urban Site (n=233) n (%)	Rural Site (n=1,055) n (%)	Remote Site (n=274) n (%)	Total for all 3 sites (n=1,562) N (%)
Live Chat	0	803 (76.1)	0	803 (51.4)
Video Call	200 (85.8)	7 (0.7)	108 (39.4)	315 (20.2)
Voice Call	30 (12.9)	91 (8.6)	166 (60.6)	287 (18.4)
Email	0	154 (14.6)	0	154 (9.9)
Short message service (SMS)	3 (1.3)	0	0	3 (0.1)

During the study period, Quezon City and Samal, Bataan were under modified enhanced community quarantine while Bulusan, Sorsogon was on modified general community quarantine. In both sites, quarantine hospitals were already fully functional.[13,14]

Telemedicine Use in the Philippines

The use of telemedicine in the Philippines became widely accepted because of the COVID-19 pandemic.[15] Results of this study showed 29% of the pediatric population used telemedicine since the beginning of the COVID-19 pandemic. No data was found on the actual rate of telemedicine use before the pandemic. This may be due to the unestablished telemedicine industry in the country prior to the pandemic.[16]

Studies on telemedicine usage in the United States (US) showed a usage rate of 22% in the year 2017, prior to the pandemic.[17] At the start of the pandemic, the usage rate decreased to 14.1% from July to December 2020. It subsequently increased to 77% in March 2021 among children aged 0-17 years of age.[17,18] While several factors may have affected usage, unfamiliarity with the platform could have been the most important. Higher telemedicine usage rates were noted in the US where telemedicine was more established pre-pandemic and during the pandemic.[18] This finding was also supported in a study by Bashshur et al., in which increased use of telemedicine was observed after established familiarity with the internet.[8]

There was no apparent difference in the telemedicine usage rates between the rural and remote sites. In the urban site, all consults were done via telemedicine due to policies related to the COVID-19 pandemic. The study by Marcin et al. reported that telemedicine was most advantageous to underserved communities, particularly rural communities.[10] In this study, the difference between the rate of telemedicine use between the rural and remote sites was only 3.9%.

Telemedicine and Improved Access to Healthcare

One of the advantages of telemedicine is its ability to improve healthcare access. It can provide better access to general and subspecialty care services.[9,10] In this study, the ability to reach different areas was demonstrated by the geographic distribution of pediatric telemedicine patients based on barangays catered for in the rural and remote sites. The geographic distribution of urban pediatric telemedicine patients was not included in the study. This is because the UPHS caters to a population within an academic institution; its service availability is not based on geographic location.

The Rural Health Unit in Samal, Bataan is in East Daang Bago and caters to 14 barangays. The health facility in Bulusan, Sorsogon is in Central Poblacion and caters to 24 barangays. Barangays vary in distance from both health facilities. There is no pattern seen between distance from the health facility and the number of pediatric patients consulting via telemedicine in both rural and remote sites. The highest numbers of pediatric patients seen via telemedicine in the rural site were from barangays 1.7, 3.1, and 6.8 km away from the health facility. In the remote site, most pediatric telemedicine consults were from barangays 1.1 and 6.5 km away. Since there was no comparison of pre-pandemic and pandemic data, it is unknown whether the rural and remote health facilities were able to reach more distant barangays with telemedicine consultation.

The advantage of telemedicine to provide better access to subspecialty care was not seen in this study since the focus of this study was primary care. Thus, conditions seen via telemedicine by each site were manageable by a general practitioner.

Primary Care Conditions Managed by Telemedicine

Results showed that numerous conditions were diagnosed via telemedicine. The most common diagnosis across the three sites was respiratory tract infection, which is similar to the finding of Chandler et al. in the United States.[9] Other disease entities managed using telemedicine were psychiatric diseases such as anxiety disorders, allergic diseases such as allergic rhinitis, chronic diseases like obesity, diseases related to pregnancy, and nonspecific diseases like myalgia.

Other studies showed that common illnesses seen via telemedicine were more varied, including well-child consults and diseases requiring specialist care such as oncologic, hematologic, renal, and endocrinologic diseases.[12] The difference in findings from this study and other published studies may be attributed to this study: (1) focusing on primary care facilities, (2) having shorter study duration, and (3) being conducted when Filipino telemedicine was in its early stages. Furthermore, some diseases were more commonly seen in specific sites in this study, but this may be due to the differences in pediatric population seen per area. For example, there were more adolescents who consulted in the urban site, where anxiety disorders and allergic disorders were more commonly seen.

Based on the Philippine Pediatric Society registry, the top diagnoses from May 1, 2006 to October 26, 2022 include pneumonia, diarrhea, neonatal sepsis, urinary tract infection, dengue fever, and asthma.[19] Of these diagnoses, three (pneumonia, urinary tract infection, asthma) were also in the top diagnoses made via telemedicine in at least one of the three sites included in this study. This demonstrates the potential of telemedicine to possibly lessen the need for face-to-face consultations, especially for the most common conditions seen in the primary care setting.

Platforms and Applications of Telemedicine

Literature showed numerous applications of telemedicine. Aside from providing sick child consultations, other roles of telemedicine include: furthering medical education and research, enhancing health record upkeep, and increasing attendance rate of patients to clinics.[9,12]

In this study, telemedicine was used primarily for patient consultations. The other uses of telemedicine were not explored during the study time frame. Thus, the most common platforms reported in this study refer to platforms used for patient consultations. Internet access may have differed among the three sites, and among patients within a single study site. This factor may have affected the use of telemedicine for consultation. Subsequently, this may have played a role in the difference in most common platforms of telemedicine used per site.

Limitations

This study had multiple limitations. First, it involved extraction of data from the EMR; thus, results are dependent on the accuracy and completeness of EMR data. Relationships and associations between variables were not analyzed in the study.

Second, the data analyzed for the study was extracted during a 1-year period when full adoption of telemedicine was still in its nascent stages. Data extracted for this study may not yet be generalizable to the full potential of telemedicine.

Third, the study was only able to present data for pediatrics patients. It is limited to present a picture of the conditions and platforms used for this population.

Lastly, the study was not able to evaluate the internet access of patients across sites. This may have affected telemedicine usage for consults.

CONCLUSION

Inequity in healthcare access and delivery has been an evident problem in the Philippines even before the COVID-19 pandemic, but it was further aggravated by the pandemic. Telemedicine is a good alternative for continuing healthcare delivery. It offers great potential for use in primary care, particularly in the Philippines. The 29% telemedicine usage rate, seen in this study, is comparable to pre-pandemic telemedicine usage rate in the US, where the practice has been established longer.

Telemedicine allowed for consultations to be provided for children less than 19 years old in urban, rural, and remote sites. The most common diagnosis for all three sites was upper respiratory tract infection. Other disease entities such as lower respiratory tract infections, skin infections, urinary tract infections, obesity, anxiety disorders, allergic rhinitis, diseases related to pregnancy, and myalgia were also managed via telemedicine. For this study, it was seen that telemedicine was mainly used for sick child consultations. The most common platforms used were live chat, video calls, and voice calls. Published literature has shown other advantages of telemedicine which have yet to been explored in the Philippine primary care setting.

Recommendations

In this study, there was no comparison of pediatric consultation rates before the pandemic and during the pandemic, when telemedicine was adapted in the three sites. In line with this, one good area of research would be to compare the pediatric consultation rates in an urban, rural, and remote setting before and after telemedicine was implemented to see whether telemedicine is able to increase availability of healthcare, and to see if there are significant differences in its utilization depending on geographic profile.

Since the study made use of EMR data, user profiles were described based only on recorded data available. Associations could not be made for relationships between various profile factors and telemedicine use. For example, association between distance from health unit and number of pediatric telemedicine consults was not derived in this study—despite acknowledging this is a useful factor to

consider. Determination of other factors such as educational attainment, economic status, nature of chief complaint, and their associations with telemedicine utilization would also be helpful for the continuous implementation of telemedicine in the country.

Pediatric conditions managed through telemedicine in this study were conditions related to primary care. Other studies report that access to subspecialty care is one significant advantage of telemedicine. In line with this, pediatric conditions seen via telemedicine in other health institutions, including referral institutions, are worth exploring.

The full potential of telemedicine in the Philippines was not demonstrated in this study due to the short study duration. It would be useful to see if there will be a difference in pediatric conditions, platforms, and applications of telemedicine as telemedicine becomes more established in the country. The inclusion of the adult population would also be helpful because it can provide a broader picture of how telemedicine in the country can be utilized.

A follow-up study on telemedicine usage rate after COVID-19 restrictions have been lifted will also be useful to determine sustainability of telemedicine in the country.

Acknowledgments

The author (ACFL) would like to thank the UP Center for Integrative and Developmental Studies where PPCS was housed and Dr. Anna Claudine F. Lahoz for her valuable contributions to this study.

Disclaimer

Views expressed by the authors in the submitted article are their own and not an official position of the institution or funder.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

All authors have no conflicts of interest to declare.

Funding Source

The study was funded by the Philippine Department of Health (DOH), Philippine Health Insurance Corporation (PhilHealth), Emerging Interdisciplinary Research Program (EIDR), Center for Integrative and Development Studies (CIDS), and Philippine Council on Health Research and Development (PCHRD).

REFERENCES

1. Philippine Statistics Authority. Urban Barangay [Internet]. 2017 [cited 2023 Jan 4]. Available from: https://psa.gov.ph/sites/default/files/attachments/hsd/specialrelease/2015%20POPCEN%20%20Special%20Release%20of%20Urban%20Population%20of%20the%20Philippines_Urban%20Rural_Explanatory%20Text.pdf
2. What is GIDA? [Internet]. Gov.ph. [cited 2023 Jan 4]. Available from: https://doh.gov.ph/faqs/What-is-GIDA
3. Naria-Maritana MJN, Borlongan GR, Zarsuelo M-AM, Buan AKG, Nuestro FKA, Dela Rosa JA, et al. Addressing primary care inequities in underserved areas of the Philippines: A Review. Acta Med Philipp. 2020 Dec;54(6):722-33. doi: 10.47895/amp.v54i6.2578.
4. Utidjian L, Abramson E. Pediatric telehealth: Opportunities and challenges. Pediatr Clin North Am. 2016 Apr;63(2):367–78. doi: 10.1016/j.pcl.2015.11.006. PMID: 27017042.
5. Patdu ID, Tenorio AS. Establishing the legal framework of telehealth in the Philippines. Acta Med Philipp. 2016;50(4):237-46. doi: 10.47895/amp.v50i4.763.
6. Okereke M, Ukor NA, Adebisi YA, Ogunkola IO, Favour Iyagbaye E, Adiela Owhor G, et al. Impact of COVID-19 on access to healthcare in low- and middle-income countries: Current evidence and future recommendations. Int J Health Plann Manage [Internet]. 2021 Jan;36(1):13–7. doi: 10.1002/hpm.3067. PMID: 32857892.
7. Sahar AN. The ripple effect of COVID-19 Pandemic in healthcare. Int J Res Granthaalayah. 2020;8(12):30–5. doi: 10.29121/granthaalayah.v8.i12.2020.2518.
8. Bashshur R, Doarn CR, Frenk JM, Kvedar JC, Woolliscroft JO. Telemedicine and the COVID-19 pandemic, lessons for the future. Telemed J E Health. 2020 May;26(5):571–3. doi: 10.1089/tmj.2020.29040.rb. PMID: 32275485.
9. Chandler AL, Beavers JC, Hall RW. Telemedicine in pediatrics: Possibilities and pitfalls. Pediatr Rev. 2020 Jul;41(7):376–8. doi: 10.1542/pir.2019-0171. PMID: 32611805.
10. Marcin JP, Ellis J, Mawis R, Nagrampa E, Nesbitt TS, Dimand RJ. Using telemedicine to provide pediatric subspecialty care to children with special health care needs in an underserved rural community. Pediatrics. 2004 Jan;113(1 Pt 1):1–6. doi: 10.1542/peds.113.1.1. PMID: 14702439.
11. Philippine Primary Care Studies. Philippine Primary Care Studies Program Description and Overview of Methods. 2019.
12. Shah AC, Badawy SM. Telemedicine in pediatrics: Systematic review of randomized controlled trials. JMIR Pediatr Parent. 2021 Feb;4(1):e22696. doi: 10.2196/22696. PMID: 33556030.
13. Ranada P. EXPLAINER: What's modified ECQ and modified GCQ? Rappler [Internet]. 2020 May 12 [cited 2023 Jul 28]. Available from: https://www.rappler.com/newsbreak/iq/260650-explainer-what-is-modified-ecq-gcq/
14. Interagency Task Force For The Management of Emerging Infectious Diseases. Resolution No. 136-F. Series of 2021 [Internet]. 2021 Sept 6. [cited 2023 Jul 28]. Available from: https://quarantine.doh.gov.ph/wp-content/uploads/2021/09/20210906-IATF-RESO-RRD.pdf
15. Curfman A, McSwain SD, Chuo J, Yeager-McSwain B, Schinasi DA, Marcin J, et al. Pediatric telehealth in the COVID-19 pandemic era and beyond. Pediatrics. 2021 Sep;148(3):e2020047795. doi: 10.1542/peds.2020-047795. PMID: 34215677; PMCID: PMC8669573.
16. Macariola AD, Santarin TMC, Villaflor FJM, Villaluna LMG, Yonzon RSL, Fermin JL, et al. Breaking barriers amid the pandemic: The status of telehealth in southeast Asia and its potential as a mode of healthcare delivery in the Philippines. Front Pharmacol. 2021 Nov;12:754011. doi: 10.3389/fphar.2021.754011. PMID: 34819860; PMCID: PMC8606793.
17. Villarroel MA, Lucas JW. Telemedicine use in children aged 0-17 years: United States, July-December 2020. Natl Health Stat Report. 2022 May;(170):1-11. PMID: 35593733.
18. Post-Covid Pediatric Telehealth Usage: Parental Attitudes and the Impact of Social Determinants of Health [Internet]. 2021 Jul [cited 2022 Sep 15]. Available from: https://filecache.mediaroom.com/mr5mr_nemoursfoundation/180110/Post-Covid%20Pediatric%20Telehealth%20Usage-Parental%20Attitudes%20and%20the%20Impact%20of%20Social%20Determinants%20of%20Health.pdf
19. Pediatrics disease registry program - [Internet]. Ivant.com. [cited 2022 Oct 26]. Available from: https://pps.ivant.com/disease-common.do