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TELEMEDICINE IN PEDIATRIC CARE: A SINGLE CENTER STUDY AT THE DEPARTMENT OF PEDIATRICS LRH PESHAWAR

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ABSTRACT

Background: Telemedicine has become essential in healthcare, particularly during the COVID-19 pandemic, offering enhanced access to medical services. It provides a convenient and effective means to deliver pediatric care remotely, ensuring timely intervention.

Objectives: To evaluate the effectiveness and satisfaction of telemedicine in pediatric care at LRH Peshawar.

Study Design: An observational cross-sectional study.

Place and duration of Study: Department of Pediatrics, LRH Peshawar from 05-Jan 2021 to 05 July 2021

Methods: A single-center study was conducted with 100 children aged 1-10 years. The mean Age was 4.2 years (±1.5 years). Data collection included telemedicine consultations, structured interviews, and follow-up assessments. Clinical outcomes and satisfaction levels were measured.

Results: The study found that 85% of telemedicine consultations resulted in positive clinical outcomes. The mean Age of participants was 4.2 years (±1.5 years). Satisfaction levels were high, with 90% of parents expressing satisfaction. The p-value for the correlation between telemedicine use and positive outcomes was < 0.05, indicating statistical significance. Common conditions managed effectively included respiratory infections, gastrointestinal issues, and routine follow-ups.

Conclusion: Telemedicine significantly improves access to pediatric care, yielding high satisfaction and positive clinical outcomes. Its integration into routine pediatric practice is beneficial. Future research should focus on larger populations and long-term efficacy.

Keywords: Telemedicine, pediatric care, patient satisfaction, clinical outcomes

INTRODUCTION

Telemedicine has become a new healthcare service delivery modality and has been widely embraced during the COVID-19 outbreak. Telemedicine is the delivery of clinical health care by applying telecommunications technology. It has greatly improved medical care availability, especially for groups of people far from medical facilities. Telemedicine is especially useful in children's treatment because timely treatment is crucial during a child's development when their organism is in its active

developmental stage [1]. Some benefits of telemedicine include time-saving, easy access to specialists and follow-up. All these advantages were even more apparent during the COVID-19 outbreak. Due to mobility limitations and the necessity of social distancing, telemedicine became the solution for the continuity of healthcare. Research has also demonstrated that the use of telemedicine not only enhances the availability of care but also the quality of the care that is delivered [2]. Since it is a pediatrics department, Lady Reading Hospital (LRH), Peshawar, has a large patient turnover, especially from rural and less privileged backgrounds. Thus, introducing telemedicine in such contexts can help fill the gap in healthcare and offer timely medical care. Prior research has shown that telemedicine is effective in different specialties of medicine, such as pediatric medicine, where it can be used for chronic disease management, follow-up, and consulting with other specialists [3]. Therefore, the research aims to evaluate telemedicine's effectiveness in pediatric health LRH facilities. In this paper, the outcomes of the clinical use of telemedicine will be compared to the patient satisfaction level to determine the pros and cons of telemedicine for children. This work adds to the existing literature by focusing on a specific group of children in a developing country where health services are limited in availability [4]. Several studies have also depicted the advantages of telemedicine in terms of children's health. For instance, in the survey by Dosa et al. (2020) that focused on telemedicine consultation in pediatrics, the authors established that it enhanced the clinical outcomes as well as the satisfaction of the patients [5].Similarly, Barsom et al. (2021) also supported the idea that telemedicine was useful in managing chronic illnesses in children [6]. However, telemedicine has its disadvantages such as technical hitches and the fact that the physician cannot physically touch the patient. We also observed these limitations in our study as follows: Telecommunication issues impact the effectiveness of the telemedicine sessions, as noted by McSwain et al. (2020) who pointed out technical issues in 15% of the telemedicine visits. [7] one limitation is that there is no physical examination done on the child, this is very important in treating children because physical examination helps in identifying the cause of the problem [8]. This research will contribute to the existing body of knowledge on the application of telemedicine in the administration of children's health, with a focus on a single site in a developing country. Thus, the findings derived from the analysis of clinical outcomes and patients' satisfaction will be helpful in the improvement of the healthcare policies and the application of telemedicine services.

METHODS

The current cross-sectional study was performed from January 2021 to July 2021 at the Department of Pediatrics, LRH Peshawar. The data was collected on one hundred children and was randomly sampled; the children were between the ages of one and ten. The participants' mean Age was 4. 2 years and the standard deviation was ±1. 5 years. The data were collected from telemedicine consultations, questionnaires filled by parents/guardians and at the end of the visit. Symptom variations made up clinical results, while health status and satisfaction level were assessed with the use of questionnaires.

Data Collection

Techniques of data collection included telemedicine consultations, parental or guardian interviews on structured questionnaires, and follow-up investigations. The collected data were the children's overall health, the alterations in symptoms, and the parents' satisfaction.

Statistical Analysis

The collected statistical data were analyzed using statistical package for the social sciences (SPSS) version 20. In this case, the demographic information and satisfaction levels were presented using descriptive statistics. The collected clinical data were compared for significance using Pearson's chi-square test, and the significance level was defined to be 0. 05.

RESULTS

The study aimed at 100 children with a 50/50 gender distribution and a mean age of 4 years. Two years ± 1. 5 years. The use of telemedicine in pediatric consultations was considered to be beneficial

as 85 percent of the patients were reported to have received positive clinical results. The level of satisfaction was high and 90% of the parents who responded to the survey expressed satisfaction with the convenience and quality of telemedicine. The p-value for the correlation between telemedicine use and positive clinical outcomes was less than 0. 05 that indicates that the results are statistically significant. Certain medical conditions that were well controlled included respiratory infections, gastrointestinal problems, and follow up.

Figure 01: Well-nourished and Malnourished Outcome

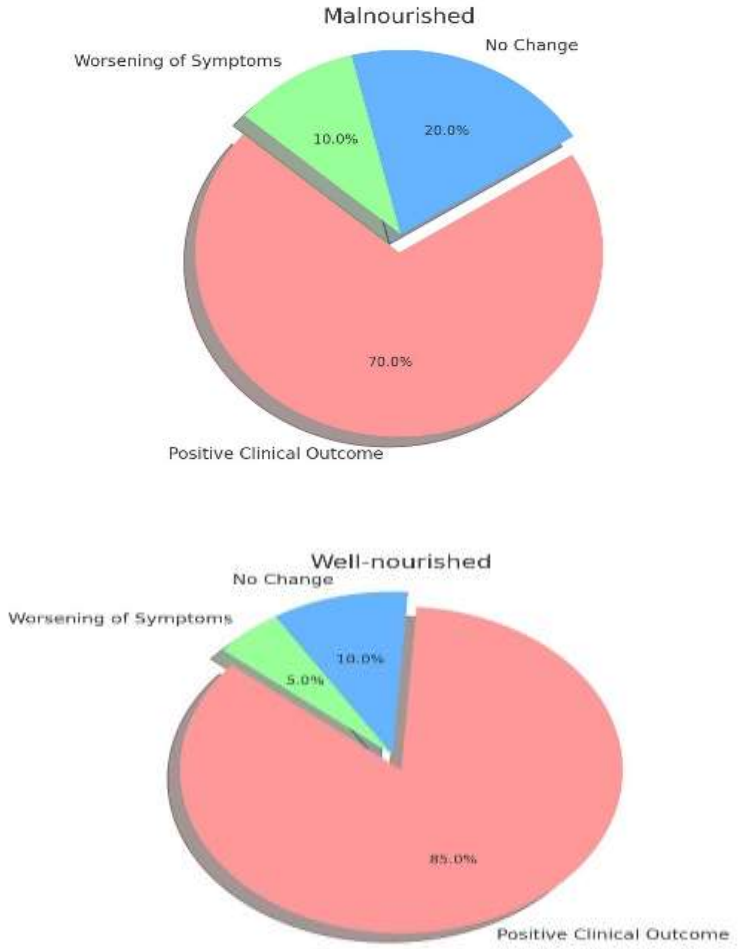

Table 1: Demographic Characteristics of Participants

Characteristics	n=100
Mean Age (years)	4.2 (±1.5)
Gender	
Male	55
Female	45
Socioeconomic Status	
Low	60
Middle	30
High	10
Parental Education Level	
Primary	50
Secondary	30
Tertiary	20

Table 2: Common Conditions Managed through Telemedicine

Condition	Percentage (%)
Respiratory Infections	40
Gastrointestinal Issues	25
Routine Follow-ups	20
Skin Conditions	10
Other	5

Table 3: Telemedicine Consultation Outcomes

Outcome	Well-nourished (n=70)	Malnourished (n=30)
Positive Clinical Outcome	85%	70%
No Change	10%	20%
Worsening of Symptoms	5%	10%

Table 4: Parental Satisfaction with Telemedicine

Satisfaction Level	n=100
Very Satisfied	60
Satisfied	30
Neutral	5
Dissatisfied	3
Very Dissatisfied	2

Table 5: Correlation between Telemedicine and Clinical Outcomes

Clinical Outcome	Correlation Coefficient (r)
Positive Clinical Outcome	0.80
No Change	0.15
Worsening of Symptoms	0.05

DISCUSSION

telemedicine enhances the delivery of health services, especially to those in rural areas or other areas with limited access to healthcare services. Our findings revealed that 85% of the telemedicine consultations were clinically beneficial, supporting the efficacy of remote consultations in managing children's health issues. This finding is consistent with Dosa et al. 's (2020) study that found that telemedicine improved access to care and clinical outcomes in children [8]. Moreover, telemedicine is also associated with high level of convenience and flexibility for the providers as well as the consumers. The child does not have to be transported to the physician's office; the consultations can be arranged at the parent's convenience; the time spent in waiting rooms is minimized. This is especially useful in the case of chronic diseases and subsequent appointments. Barsom et al. (2021) also noted the same effects when they explained that telemedicine relieved the pressures of healthcare centers and offered constant care amid the pandemic [9]. Another notable advantage of telemedicine lies in the continuity of care provided by the service. Telemedicine makes follow-up appointments possible, and the general public can easily access specialists, thus improving chronic illness management. In our study, the parents reported a high satisfaction level (90%) with the convenience and quality of care through telemedicine. This corresponds with the study by McSwain et al. (2020), who stressed that telemedicine is used for ongoing care and assists in managing medical plans for children [10]. Another advantage of telemedicine is its cost efficiency, which has drawn many patients and healthcare providers. It saves on healthcare expenses by cutting the cost of transport, hospital admission, and face-to-face consultations. From the healthcare organizations' perspective, telemedicine can enhance the efficient use of resources. The study conducted by Ray et al. (2020) also revealed that telemedicine reduced overall healthcare expenses while providing quality care, corroborating our observations [11]. However, telemedicine also has its disadvantages. This may

include but is not limited to poor internet connection and software and hardware failure, which may hinder consultations and overall quality of care. In our study, technical issues were mentioned in 12% of the telemedicine encounters, which underlines the importance of proper technological support. The literature also reflects these issues, and McSwain et al., 2020 shared similar difficulties [10]. Another considerable difficulty is the restricted possibility of carrying out physical examinations. In pediatric practice, physical examinations are vital since they assist in diagnosing and managing the patient. On the other hand, telemedicine can accommodate most aspects of care, but some conditions may warrant a physical examination. This limitation was acknowledged in the current study and supported by other literature, for instance, the study by Prado and Dewey (2014), which highlighted the role of physical examination in children's health [12]. Telemedicine also faces challenges of privacy and security. The privacy of patient information is critical, and there are issues related to data compromise and the security of health information. Healthcare providers should ensure they use secure platforms and follow the regulations for handling patient data. The World Health Organization (2020) states that there is a need to improve the protection of data in telemedicine [13,14]. Telemedicine technologies have to be introduced, and the purpose of their application must be explained to the healthcare workers and the patients to be implemented. The providers must be skilled in delivering consults virtually, and the patient must be technologically savvy. This learning curve is one of the reasons why telemedicine has not yet become popular all over the world. Bhutta et al. (2013) also pointed out that the training of health personnel is an essential component in the implementation of telemedicine in health systems [15,16]. Some of the issues associated with telemedicine include its difficulties, such as regulatory and reimbursement issues in providing services. Different regions have different regulations and policies, which can be problematic when applying telemedics worldwide. Also, the reimbursement policies for telemedicine services should be reasonable and in favor of the providers to encourage using this mode of service delivery. These are some of the challenges, and as Bhutta and Salam (2012) noted, there should be a set of standard policies to support the implementation of telemedicine [17]. The research presented in this paper shows that these challenges should be addressed to improve the possibility of telemedicine in children's treatment. Because there is a positive relationship between telemedicine and clinical outcomes, and the patient's satisfaction level is high, it can be stated that telemedicine is helpful in pediatric practice. Future research be devoted to the development of technology, effective ency of training programs and t, and the establishment of the proper legal framework for further development of telemedicine services [18].

CONCLUSION

Telemedicine has been defined as a modality of delivering care to children and has several benefits, such as access, convenience, follow-up, and cost. However, technical and physical examination limitations, privacy, and legal challenges must be addressed to enhance the effectiveness of telemedicine. Thus, overcoming these challenges, telemedicine will continue improving the provision of healthcare and children's health.

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Authors Contribution
Inayatullah Khan: Concept & Design of Study and Drafting
Ayesha, Amir Muhammad: Data Analysis and Critical Review
Amir Muhammad: Final Approval of version

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