RESEARCH ARTICLE

Impact of COVID -19 on expanded programme on Immunisation in District Dir lower Khyber Pakhtunkhwa

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Abstract

Objective: To study the impact of coronavirus disease-2019 on Expanded Programme on Immunisation in a rural setting.

Method: The descriptive, cross-sectional study was conducted in five union councils of District Dir Lower, in the Khyber Pakhtunkhwa province of Pakistan. Data was collected from March to August 2020, which was a period of lockdowns in the wake of the coronavirus disease-2019, and then from March to August 2021. The sample comprised children aged <2 years. Data was analysed using SPSS 25.

Results: Of the 330 children, 210(63.6%) were boys, and 120(36.4%) were girls, and all 330(100%) were located in rural areas. First-phase data showed that the maximum coverage rate of immunisation was 258(78.2%) noted in OPV1(Oral Polio Vaccine) Penta1(Pentavalent vaccine), PCV10-1 (*Pneumococcal pneumonia*) and Rota 1(Rota Vaccine), and the least vaccination rate was 68.2% for Measle-1. In the second phase, 23% incline was noted in Measles-2 vaccination, followed by 16.3% in OPV2, Penta 2, PCV10-2 and Rota 2, 16% in Measles-1, 14% in OPV-3, Penta-3, PCV10-3, Rota-3 and IPV, 11.5% in OPV-1, Penta-1, PCV10-1, and Rota-1, and 10.6% in OPV-0 and BCG-0.

Conclusions: Immunisation programme was affected by lockdowns during the active phase of the coronavirus disease-2019 pandemic.

Keywords: COVID-19, Immunisation, Coronavirus, Pandemic, Vaccination. (JPMA 74: 456; 2024)

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Introduction

The Expanded Programme on Immunisation (EPI) is one of the major campaigns worldwide, with the aim of vaccinating children throughout the world. EPI was established in 1974 worldwide to develop and increase immunisation programmes. In Pakistan, EPI was launched in 1978 to protect children by immunising against diseases like diphtheria, pertussis tuberculosis, poliomyelitis, measles and others. In Pakistan, it is called the National Immunisation Programme (NIP). Although 58% of children at risk of disease are currently unimmunised,[1] in some areas of Pakistan, the introduction of immunisation programme improved coverage from 5% to 84%.[2]

Immunisation is a global health and development success story, saving millions of lives every year. It has been very successful, with coverage rates going rapidly from <5% to >80% in many low- and middle-income countries (LMICs). National EPI programmes in most developing countries have led to major reductions in deaths and hospital admissions from diseases like measles and neonatal tetanus.[3]

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The coronavirus disease-2019 (COVID-19) pandemic affected global populations in different ways. Primary, rehabilitative, palliative and long-term care was greatly affected, with over 40% countries reporting disruptions, and suggesting. Flexibility in making strategies to maintain routine immunisation services.[4]

The pandemic made everyone realise the importance of vaccination. As social distancing requirements were relaxed, unvaccinated children were likely to be more prone to diseases, such as measles.[5]

A study showed that disruption of immunisation services even for short periods could result in an increase in susceptible individuals, and may result in outbreaks of vaccine-preventable diseases (VPDs), like measles.[6]

Studies have reported that the administration of the first dose of meningococcal B vaccine reduced by 68.4% in one month in the Valencian community, and in Andalusia a fall in the administration of total doses of this vaccine was to the tune of 39%, whiles those of Rota-virus fell by 18%.[7]

In the United Kingdom, at the start of 2020 (week 1 to 9) hexavalent vaccination was 5.8% lower and MMR (Measles, Mumps and Rubella) vaccination 1% lower compared to 2019. Weeks 10-12 were a transition period, with public discussion about the possibility of physical distancing, and in this period, hexavalent vaccination was 4.4% lower and MMR vaccination 7.2% lower than in 2019.[8]

In Canada, there was 81.8% on-time vaccination record

before COVID-19, which went down to 62.1% during the pandemic.[9]

In Pakistan, 51% decrease in average daily immunisations was noted during the lockdown period compared to baseline data, and the reduction was heterogeneous across districts and union councils of Sindh province, especially the rural areas.[10]

The current study was planned to assess the impact of COVID-19 on EPI in a rural setting in the Khyber Pakhtunkhwa (KP) province of Pakistan.

Subjects and Methods

The descriptive, cross-sectional study was conducted in five union councils of District Dir Lower, in the Khyber Pakhtunkhwa province of Pakistan. Data was collected from March to August 2020, which was a period of COVID-19-related lockdowns, and then from March to August 2021. After approval from the ethics review board of the University of Lahore main Campus and permission from the District Health Officer (DHO), the sample size was calculated with 95% confidence interval (CI) and 5% margin of error, while keeping the proportion of missed vaccination among children as 31%.[6]

Data was collected from five vaccination centres, and the National immunisation schedule of routine vaccination was followed. Those included were parents having children aged <2 years of either gender. Children of other areas or visitors, and those with known allergy were excluded.

Data was analysed using SPSS 25. Data was expressed as frequencies and percentages.

Results

Of the 330 children, 210(63.6%) were boys and 120(36.4%) were girls, and all 330(100%) were located in rural areas (Table 1).

First-phase data showed that the maximum coverage rate of immunisation was 258(78.2%) noted in OPV1(Oral Polio Vaccine) Penta1(Penta valent vaccine), PCV10-1 and Rota (Rota Virus Vaccine)1, and the least vaccination rate was 68.2% for Measle-1. In the second phase, 23% incline was noted in Measles-2 vaccination, followed by 16.3% in OPV2, Penta 2, PCV10-2 and Rota 2, 16% in Measles-1, 14% in OPV-3, Penta-3, PCV10-3, Rsota-3 and IPV, 11.5% in OPV-1, Penta-1, PCV10-1, and Rota-1, and 10.6% in OPV-0 and BCG-0 (Table 2; Figure 1).

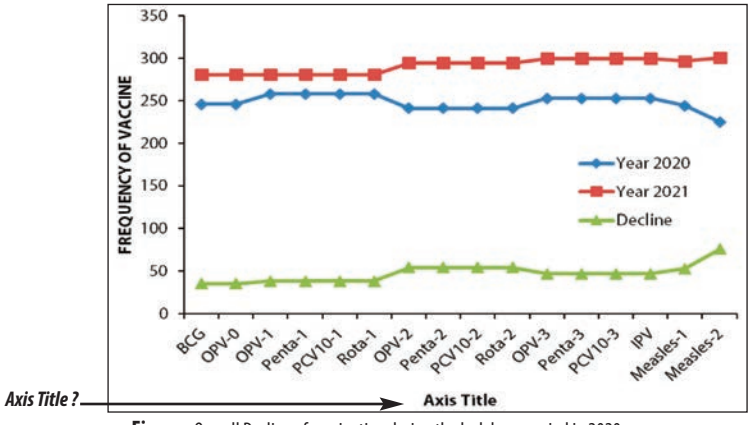

Figure: Overall Decline of vaccination during the lockdown period in 2020.

Table-1: Demographic data.

Demographic data	n (%)
Area of Residency	
Rural	330 (100)
Gender	
Male	210 (63.6)
Female	120 (36.4)
Number of Union Councils	
Bishgram	66 (20)
Zimdara	66 (20)
Lal Qilla	66 (20)
Hayaseri	66 (20)
Chinar Kot	66 (20)
Father's Income (in Pak Rs/month)	
Un-employed	41 (12.4)
<25000	97 (29.4)
26000 to 50000	99 (30.0)
51,000 to 70000	53 (16.1)
71000 to 100000	40 (12.1)
Father's Education	
Primary	86 (26.1)
Middle	177 (53.6)
Higher	67 (20.3)
Mother's Education	
Primary	150 (45.5)
Middle	136 (41.2)
Higher	44 (13.3)

Table-2: Comparison of lockdown and post-lockdown data.

Vaccines	Lock down period 2020 (March-August) n (%)	Post lock down period 2021 (March-August) n (%)	Difference d/ Incline in 2021 n (%)
BCG	246 (74.5)	281 (85.1)	35 (10.6)
OPV0	246 (74.5)	281 (85.1)	35 (10.6)
OPV1	258 (78.2)	296 (89.6)	38 (11.5)
Penta1	258 (78.2)	296 (89.6)	38 (11.5
PCV10_1	258 (78.2)	296 (89.6)	38 (11.5
Rota 1	258 (78.2)	296 (89.6)	38 (11.5)
OPV2	241 (73)	295 (89.3)	54 (16.3)
Penta2	241(73)	295 (89.3)	54 (16.3)
Rota2	241 (73)	295 (89.3)	54 (16.3)
PCV10_2	241 (73)	295 (89.3)	54 (16.3)
OPV3	253 (76.7)	300 (90.9)	47 (14)
Penta3	253 (76.7)	300 (90.9)	47 (14)
PCV10_3	253 (76.7)	300 (90.9)	47 (14)
IPV1	253 (76.7)	300 (90.9)	47 (14)
Measles1	244 (73.9)	297 (90)	53 (16)
Measles2	225 (68.2)	301 (91.2)	76 (23)

Discussion

During the COVID-19 pandemic, the outreach activities of routine immunisation had to be suspended and very few people could access their nearest immunisation centre for getting their children immunised.[11] The current study also showed that all types of vaccination in the five union councils analysed were affected. Similar findings were reported by Nabil et al.[12] Many studies have explored the potential for BCG to have beneficial effects against COVID-19 disease. It was found in a study that BCG vaccination resulted in 68% risk reduction for COVID-19 disease.[13]

Interruption in children's routine vaccination can lead to the spread of other preventable diseases. The pandemic had a negative effect on routine immunisation. The task of making Pakistan a polio-free country suffered a major setback as 40 million children in Pakistan missed the polio vaccination during the COVID-29 lockdown phase when all immunisation programmes had to be suspended.[14] In the current study, OPV-0 was found affected during the first phase, but the numbers increased in the post-lockdown phase.

In terms of disrupted immunisation schedules, the current findings are consistent with those from high-income countries (HICs), like the United States[15] and elsewhere[16].

In the current study, maximum increase (23%) was noted in Measles-2, which means that during the lockdown period, Measles-2 had seen a decline of 23%. A significant decline in Measles-2 vaccination during the lockdown period was also reported by Rahman et al.[17]

The current study has limitations as data was collected only from 5 selected union councils in 1 district. As such, the findings are not applicable to the whole KP province, especially to the urban areas.

Conclusion

Immunisation programme was affected by lockdowns during the active phase of the COVID-19 pandemic.

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Conflict of Interest: None.

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Author Contribution:

A: Literature search, study design, concept, data collection, interpretation, analysis, drafting and revising critically.

SK: Study design, concept, questionnaire design, drafting, revising critically and final approval.

IHK: Literature search, study design, concept, questionnaire design, data analysis, interpretation, drafting, revising critically and final approval.

TA: Questionnaire design, data analysis, interpretation, drafting and revising critically.