

Gaps and Lapse in Population Based Childhood Vaccination Coverage, Lessons Learned for Building National Capacity

Manal Omran Taryam¹, Waleed Al Faisal^{2, *}, Hamid Hussein², Ahmed Wasfy³, Ali Al Salaq⁴

¹Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE

²Health Affairs Department, Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE

³Dubai Health Authority, Dubai, UAE

⁴Dubai Statistics Center, Dubai, UAE

Abstract

The best way to protect children from 14 serious childhood diseases is to maintain the recommended immunization periodicity and administer all of the recommended immunizations by age. A number of barriers to immunization have been identified as the primary reasons. Overall, parents and caregivers believe that vaccines are necessary to prevent disease and are important to children's health, but a common misconception is that multiple vaccines can overwhelm the immune system. The study aims to study the immunization coverage among childhood population in Dubai, and to identify the gaps and lapse in immunizations process in Dubai. Dubai Household Health Survey was conducted in 2014 as a Cross-sectional, multistage, stratified, Cluster survey. Houses were visited to obtain detailed information on the different health-related issues, one of them is vaccination coverage. According to Dubai Statistical center, the total population of Dubai at the end of 2014 was 2327350 (males 1613175, females 714175) (UAE 212000, Expatriates 2115350). Children aged below five years of age were investigated for immunization coverage according to expanded immunization national program requirements. All children vaccination registry booklet were inspected and questionnaire with socio-demographic as well as other health related set of data were collected by well-trained data collectors from the field. Data were analysed using SPSS 21. The study revealed that the total vaccination coverage rate for the children below 5 years of age with EPI vaccine requirements in Dubai (Both Male and Female, UAE nationals and Expatriate) was 83.1% as shown by table 1, about 83.5% for Emirati and 82.5% coverage for expatriate. The total coverage rate among Emirati males was 81.8%, while among Emirati females it was 85.1%, while it was equally distributed as per male and female coverage rate among Expatriates (82.5%). The study concluded that there are still significant gaps and lapse in immunization coverage regardless of the huge health system efforts to targeting children population with adequate and recommended vaccines. Increased anxiety about the effects and pain associated with multiple injections may be the causes behind those gaps. Additionally, the large number of routine vaccines has made it increasingly difficult for parents to track and ensure adequate, timely administration. Frequent catch up vaccination campaigns needs to be activated to bridging the gaps in immunizations coverage along with strengthening the immunization surveillance system.

Keywords

Gaps, Vaccination, Building National Capacity

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* Corresponding author

E-mail address: wldalfaisal@gmail.com (Al F. W.)

1. Introduction

The best way to protect children from 14 serious childhood diseases is to maintain the recommended immunization periodicity and administer all of the recommended immunizations by age. [1] A number of barriers to immunization have been identified as the primary reasons. Overall, parents and caregivers believe that vaccines are necessary to prevent disease and are important to children's health, but a common misconception is that multiple vaccines can overwhelm the immune system, especially with the expanding immunization schedule. [2] One survey showed that up to one third of parents report concern that their child is receiving too many vaccines in 1 visit. [2] Another survey highlighted concern that multiple vaccines can have a negative effect or weaken the child's immune system. [3] Current studies have refuted this misconception, and have shown that infants and young children have the ability to mount an immune response to multiple vaccines given simultaneously. [4]

Additionally, it is well known that children are exposed to many more antigens in their daily lives than they are exposed to during childhood immunization. [5] Caregivers also may choose to forego administration of vaccines during minor acute illnesses, which can lead to missed opportunities to immunize and delayed or missed immunization. Paradoxically, it is the success of immunizations in preventing disease that may be a reason for vaccine refusal. Because vaccine-preventable disease (VPD) rates are low, and the serious sequel of VPD is not well known, parents may be unaware that their children are still at risk. [6]

Immunizations no doubt are one of the most effective preventive health measures and have saved countless numbers of lives. Despite all requirements, vaccine refusal and nonmedical exemption may be on the rise. [7, 8] In a survey by the American Academy of Pediatrics, 85% of pediatricians reported encountering parents who refuse vaccines. [9]

Global Vaccine Action Plan (GVAP) was endorsed by 194 states. The mission of this initiative is to improve health by extending the full benefits of immunization to all people till 2020 and beyond, regardless of where they are born, who they are or where they live. This is to be achieved using existing partnerships and coordinating mechanisms to support adapting the GVAP to the regional and country level. One of the goals of GVAP is to "meet vaccination coverage targets in every region, country and community". [10]

2. Objectives

To study the immunization coverage among childhood population in Dubai, and to identify the gaps and lapse in immunizations process in Dubai.

3. Methods

Dubai Household Health Survey was conducted in 2014 as a Cross-sectional, multistage, stratified, Cluster survey. Houses were visited to obtain detailed information on the different health-related issues; one of them is vaccination coverage. According to Dubai Statistical center, the total population of Dubai at the end of 2014 was 2327350 (males 1613175, females 714175) (UAE 212000, Expatriates 2115350). Children aged below five years of age were investigated for immunization coverage according to expanded immunization national program requirements. All children vaccination registry booklet were inspected and questionnaire with socio-demographic as well as other health related set of data were collected by well-trained data collectors from the field. Data were analysed using SPSS 21.

4. Results

The study revealed that the total vaccination coverage rate for the children below 5 years of age with EPI vaccine requirements in Dubai (Both Male and Female, UAE nationals and Expatriate) was 83.1% as shown by table 1, about 83.5% for Emirati and 82.5% coverage for expatriate. The total coverage rate among Emirati males was 81.8%, while among Emirati females it was 85.1%, while it was equally distributed as per male and female coverage rate among Expatriates (82.5%).

Regarding BCG the survey showed 74.9% coverage rate among all children below 5 years of age, and for HBV-1 it was 74.0%. Hex-1 showed 68.3% coverage rate, Pnuemococcal-1 vaccine 70%, Rota-1 68.6%, Hexa-2 65.7%, pnuemococcal-2 68.0% and Rota-2 64.4% coverage rate for all children below five years both male and females, Emirati and expatriates.

The current study showed that for the Penta vaccine coverage rate was 64.8% among total children, Pnuemococcal-3 55.4%, OPV1 12.2%, MMR1 was 58.2%, Varicilla 57.2% tetra Vaccine coverage rate was 57.7%, MMR2 was 64.5% and Tri Vaccine Was 66.7%.

Table 1. Coverage rate with EPI vaccine in Dubai according to types of vaccines, gender and nationality.

Nationality	Emirati						Expatriates						Total					
	Male		Female		Total		Male		Female		Total		Male		Female		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
BCG	274	73.5%	303	76.3%	577	74.9%	206	73.6%	213	76.3%	419	75.0%	480	73.5%	516	76.3%	996	74.9%
HBV-1	273	73.2%	303	76.3%	576	74.8%	202	72.1%	205	73.5%	407	72.8%	475	72.7%	508	75.1%	983	74.0%
Hexa-1	257	69.6%	272	69.0%	529	69.3%	178	66.4%	180	67.2%	358	66.8%	435	68.3%	452	68.3%	887	68.3%
Pneu-1	258	69.9%	278	70.6%	536	70.2%	186	69.4%	187	69.8%	373	69.6%	444	69.7%	465	70.2%	909	70.0%
Rota-1	251	68.0%	277	70.3%	528	69.2%	183	68.3%	180	67.2%	363	67.7%	434	68.1%	457	69.0%	891	68.6%
Hexa-2	242	67.0%	255	65.7%	497	66.4%	168	64.9%	166	64.8%	334	64.9%	410	66.1%	421	65.4%	831	65.7%
Pneu-2	251	69.5%	265	68.3%	516	68.9%	169	65.3%	175	68.4%	344	66.8%	420	67.7%	440	68.3%	860	68.0%
Rota-2	233	64.5%	240	61.9%	473	63.2%	170	65.6%	171	66.8%	341	66.2%	403	65.0%	411	63.8%	814	64.4%
Penta	228	63.9%	242	65.2%	470	64.6%	158	62.5%	166	68.0%	324	65.2%	386	63.3%	408	66.3%	794	64.8%
Pneu-3	193	54.1%	211	56.9%	404	55.5%	140	55.3%	135	55.3%	275	55.3%	333	54.6%	346	56.3%	679	55.4%
OPV-1	36	10.1%	49	13.2%	85	11.7%	42	16.6%	22	9.0%	64	12.9%	78	12.8%	71	11.5%	149	12.2%
MMR-1	195	59.5%	204	60.2%	399	59.8%	136	55.5%	134	56.3%	270	55.9%	331	57.8%	338	58.6%	669	58.2%
Varicella-1	188	57.3%	195	57.5%	383	57.4%	139	56.7%	133	55.9%	272	56.3%	327	57.1%	328	56.8%	655	57.0%
Tatra	176	58.5%	190	59.7%	366	59.1%	122	56.7%	103	54.2%	225	55.6%	298	57.8%	293	57.7%	591	57.7%
Pneu-4	160	53.2%	176	55.3%	336	54.3%	112	52.1%	96	50.5%	208	51.4%	272	52.7%	272	53.5%	544	53.1%
OPV-2	174	57.8%	190	59.7%	364	58.8%	117	54.4%	107	56.3%	224	55.3%	291	56.4%	297	58.5%	588	57.4%
Tri	37	64.9%	49	62.0%	86	63.2%	45	72.6%	25	69.4%	70	71.4%	82	68.9%	74	64.3%	156	66.7%
MMR-2	37	64.9%	47	59.5%	84	61.8%	42	67.7%	25	69.4%	67	68.4%	79	66.4%	72	62.6%	151	64.5%
All	305	81.8%	338	85.1%	643	83.5%	230	82.1%	231	82.8%	461	82.5%	535	81.9%	569	84.2%	1104	83.1%

5. Discussion

This study shows over all coverage rate of immunization among children below 5 years in Dubai Was 83.5% which little bit less than what has been revealed in Oman which almost showed about 90% coverage rate in 2015. Estimate based on coverage reported by national government. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. [11]

Countries being successful in achieving a high coverage the overall global picture is still grim especially for newer vaccines. Global coverage with three doses of Hib vaccine is estimated at 52%, for three doses of hepatitis B vaccine is estimated at 81%, for rotavirus, coverage was estimated at 14%. Thus in 2012, an estimated 21.8 million infants worldwide had not been covered by routine immunization services. In May 2012, the World Health Assembly introduced the Global Vaccine Action Plan (GVAP) which was endorsed by 194 Member states. The mission of this initiative is to improve health by extending the full benefits of immunization to all people till 2020 and beyond, regardless of where they are born, who they are or where they live. This is to be achieved using existing partnerships and coordinating mechanisms to support adapting the GVAP to the regional and country level. One of the goals of GVAP is to “meet vaccination coverage targets in every region, country and community”. [12,13]

As for gender distribution, the current study showed that there is no apparent difference in coverage rate between

males and females which is almost similar to another study conducted in Pakistan. The sex of the child and vaccination status were not significant determinants of card keeping in our study, unlike other studies. Moaissi et al. reported in their study that provision of card was better for boys as compared to girls. [14] Their study also found that except for polio, which was given at birth, chances of receiving the remaining vaccinations were higher for children with card. [14] The mother’s education was not a predictor of card retention and it was consistent with existing literature. [14] However, trials conducted on educating mothers to increase coverage resulted in an increase in card retention. [15, 16]

6. Conclusion

The study concluded that there are still significant gaps and lapse in immunization coverage regardless of the huge health system efforts to targeting children population with adequate and recommended vaccines. Increased anxiety about the effects and pain associated with multiple injections may be the causes behind those gaps. Additionally, the large number of routine vaccines has made it increasingly difficult for parents to track and ensure adequate, timely administration. Frequent catch up vaccination campaigns needs to be activated to bridging the gaps in immunizations coverage along with strengthening the immunization surveillance system.

Conflict of Interest

The authors declare that they do not have any conflict of interest.

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