Original Research

Reasons for seeking private sector vaccines available in the National Expanded Programme of Immunization for children under five years by parents residing in Nugegoda Medical Officer of Health area, Sri Lanka

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Abstract

Introduction: The government sector in Sri Lanka has a widely implemented childhood immunization programme. However, 40% of parents seek private sector services for their children's vaccination in suburban areas of the district of Colombo.

Objectives: To describe the socio-economic, operational, and experiential factors leading to the utilization of private sector services instead of government services for childhood immunization in Nugegoda Medical Officer of Health (MOH) area

Methods: A community-based descriptive study was conducted in Nugegoda MOH area. Children aged five years and below who had received one or more vaccines from the private sector were selected using systematic sampling. Data were collected using an interviewer-administered questionnaire and analysed using SPSS.

Results: Almost half (n=184; 53%) had attended government and private sector vaccination services with 47% (n=164) receiving all vaccines from the private sector. No major influence was found regarding the socio-economic factors with regards to seeking vaccines from private sector. Majority of the parents who have given their child at least one vaccine from the government clinics responded satisfactorily to its services, such as hospitality of the staff (n=137; 76%), hygiene of the clinic (n=138; 75%), reduced waiting time (n=114; 60%) and absence of post-vaccine side effects (n=152; 82%). Logistically, 55% (n=90) reported lack of accessible hours to obtain vaccination from the government sector, with 45% (n=84) being unable to find someone to accompany the child in their absence. Furthermore, 67% (n=124) reported coverage of expenses for private sector vaccinations by the workplace and availability of one-shot vaccines. Extra vaccines in the private sector applied to 74% (n=134) of parents. Moreover, children were vaccinated in the private sector following recommendations made by paediatrician (n=180; 52%) and the family doctor or general practitioner (n=31; 9%). Statistically significant association was seen between childhood vaccination preference and care received (government vs. private) during pregnancy (p=0.0001) and post-partum period (p=0.001).

Conclusions: Operational factors, place of antenatal and postnatal care, and outside recommendations from primary health providers are major contributors for the utilization of private sector service for childhood immunization, as seen in a suburban area of Colombo District.

Keywords: childhood vaccination, government sector, private sector

Introduction

Sri Lanka is a country with free healthcare provided by a well-organized system under the Ministry of Health. Under the Ministry of Health, with provincial directors of health services (PDHS) for each of the nine provinces. Each province consists of several districts and for each district, one regional director of health services (RDHS) is allocated. Under one RDHS, there are several MOHs attached. The MOH area is the basic health unit that provides maternal and child care for the public. Preventive care that includes the National Expanded Programme of Immunization (EPI) for children is delivered by MOH units.

An MOH office is headed by the MOH supported by additional MOHs, public health nursing sisters (PHNS), supervising public health midwives (SPHM), public health midwives (PHM), public health inspectors (PHI) and other supportive staff. PHM unit is the smallest unit at the grass root level which has great accessibility to the people. The National EPI was introduced to Sri Lanka in 1978. The vaccination schedule for first five years includes BCG given at birth; diphtheria, pertussis and tetanus (DPT), hepatitis B, haemophilus influenza-b (Hib) and oral polio (OPV) given at 2, 4 and 6 months; Japanese encephalitis (JE) given at 12 months; measles, mumps and rubella (MMR) given at 9 months and 3 years; DT at 5 years; and fractional IPV given at 2 and 4 months (1). The National EPI of Sri Lanka is technically guided, monitored and evaluated by the Epidemiology Unit of the Ministry of Health. The vaccine importation, storage and maintenance of the cold chain from the point of importation to the usage in vaccination centres is also monitored by the same unit. In addition to government clinics, vaccination of children is also carried out by private hospitals and general practitioners in Sri Lanka. Private hospitals with vaccine storage facilities, basic emergency facilities and services of qualified medical officers also provide vaccinations under the guidance of Epidemiology Unit.

Despite having a well-organized immunization programme in the government sector, it has been observed that around 40% of parents seek private sector services for their children's vaccination in

Nugegoda MOH Area (2). Due to this high percentage, there is a present need to investigate the reasons for seeking private sector vaccination. These findings can be used to further improve the existing vaccination services provided by the government. Hence, several studies have been carried out on this subject. One such study conducted in 2007 (3) confirmed the notion that whilst the main service provider for childhood immunization in Sri Lanka is the government sector, utilization of private sector for childhood immunization is increasing rapidly. The authors further concluded that the reasons for using private sector services were availability of non-EPI vaccines, combined vaccines and efficiency of services.

A study done (4) found that, while private providers may be more responsive to patient demand, they were more concerned about the ability of private sector physicians to provide public health services. They reported that private providers often lacked the expertise and facilities to deliver high quality preventive services. Vaccines require proper handling and storage, and private providers may fail to maintain the cold chain. One of the important findings of this study was the extent to which the quality of immunization services in the private sector was limited by lack of knowledge of healthcare workers regarding immunization schedules, vaccine disposal and waste-management practices.

A study carried out in India (5) found that vaccination at the private centres are not only costly, but also creating concern over the quality of vaccines and vaccination process. Even so, more educated parents are taking their children to private centres especially the male children. If the timing of vaccination at the government centres can be re-scheduled to evening hours, many of these parents who work during the day can bring their children for immunization. Furthermore, following modifications to the ambience of the vaccination site (i.e. making it cleaner and organized), a large proportion of these parents can be brought back to the government services.

Another potential problem with the private sector vis-à-vis public health is that the use of private services

may lead to “missed opportunities” for vaccination. A “missed opportunity” occurs when an individual eligible for such care, visits a health care facility for curative services and does not receive concurrent preventive services (6).

The few studies that examined the quality of immunization services provided by the private sector concluded that it is, at times, inadequate. A study conducted in Cambodia found that health workers in private facilities lacked knowledge on immunization schedules, waste and vaccine management practices, and did not exchange health information with the public sector (7). Parents in general arrive at decisions after taking into account most of the factors in their immediate social networks, financial feasibility, etc. Among various factors that were explored in a study from India (8), arguably the most important factor that influenced the decision of parents was the relationship they had with their paediatrician. Health care workers including the physicians are considered a highly reliable source of information regarding vaccinations and positive recommendations from physicians typically increase vaccination. This paper aims to describe the factors that lead parents residing in the Nugegoda MOH area to seek vaccines of the National EPI in the private sector for their children under five years. It further aims to investigate whether such preference is associated with the mode of care received during pregnancy and post-partum period of mothers.

Methods

A community-based descriptive study was done in Nugegoda MOH Area from March to August 2018. The study unit was defined as parent (mother or father) or immediate caretaker such as grandparent, with a child under five years of age (completion of 60 months on the date of data collection) who had received from the private service one or more vaccines that are included in the National EPI. Parent or immediate caretaker whose child had any contraindications for vaccination or vaccinated overseas (even one or all) were excluded. The sample size was calculated using a standard formula, taking the proportion of private sector vaccination as 40% in the Nugegoda MOH Area (2). Final sample size was

409 with 10% non-response.

All the PHM areas (n=17) of Nugegoda MOH Area were included in the study. Five cohorts of children were included, and each cohort had around 800 children, hence the total child population was 4000. Since 40% of the children were utilizing private sector facilities for immunization in this area (2), the study population consisted of around 1600 children. The sampling frame for the study population was taken from Birth and Immunization Registers of each PHM. These registers have a different colour code for private sector vaccinations. According to the register, all children who met the inclusion criteria were listed and every third child was chosen for the study group. An interviewer-administered questionnaire was submitted after obtaining written consent. Household interviews were done by pre-intern doctors. All the pre-interns (3) were trained on data collection by the principle investigator. Help of relevant PHMs was taken only to identify the households. The questionnaire was pre-tested in Gangodawila North PHM Area. Pilot study was done in Gangodawila South PHM Area.

Data analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) version 22.0. Appropriate statistical tests were carried out with significance taken as p-value <0.05 for any associations.

Results

The response rate was 97% (n=348). From the total number, 31% were under 1 year of age. Ethnicity proportions were compatible with the demographic data of Western Province (82% Sinhalese) (9). Majority (59%) of the children were not the first child of family. Majority of the parents had a diploma or degree level education, while their monthly household income was Rs. <100,000 in 62% (Table 1).

There were 174 (50%) respondents who stated that they had visited a government clinic at least once for vaccinations, and 164 (47%) who had never received vaccinations at a government clinic. Only 10 (3%)

did not answer and were excluded from further analysis (Figure 1). More than 70% of the respondents stated that they were welcomed by the clinic health staff; hygiene of the clinic was satisfactory; and good quality vaccines are available in government clinics. Most respondents (61%) said that their expenses for the child's vaccines were covered by the workplace. One of the main reasons for not attending government clinics was the availability of "one-shot"/single dose vaccines in the private sector. This was stated by 61% of parents. Availability of extra vaccines that were not included in the National EPI was another reason for seeking private sector vaccines by 71% of the parents (Table 2).

Non-responsive percentage was high. Most of them stated that they were convinced by the PHM to attend clinics. However, 57% of mothers stated that they had problem in taking leave to visit government clinics for vaccination and had no one to accompany the child in their absence (Table 3). More than 50% stated that their paediatrician suggested to give private sector vaccinations followed by their family practitioner and relatives (Figure 2). There was a statistically significant association with mode of care taken during pregnancy and postpartum period with the place of vaccination. Mothers who had attended government antenatal or postpartum clinics had taken at least one vaccine for their children from a government clinic (Table 4).

Table 1: Distribution of Socio Demographic/ economic characteristics (N=348)

Characteristics	No.	%
Age (completed years)		
One year and below	108	31.0
Above one year	220	63.2
Did not respond	20	5.7
Ethnicity		
Sinhalese	284	81.6
Tamil	14	4.0
Muslim	24	6.9
Other	16	4.6
Did not respond	10	2.9
Parity		
First-born child	142	40.8
Not the first-born child	206	59.2
Educational level of mother		
GCE A/ Level or less	164	47.1
Diploma/ Graduate	180	51.7
Did not respond	4	1.1
Educational level of father		
GCE A/ Level or less	148	42.5
Diploma/ Graduate	202	58.0
Did not respond	0	0.0
Monthly income		
Less than Rs. 100,000	218	62.6
Rs. 100,000 or more	124	35.6
Did not respond	6	1.7

Table 2: Inhibitory responses given by the respondents who used government/MOH facility for vaccinating their child (N=184)

Response	Agreed		Disagreed		No responded	
	No.	%	No.	%	No.	%
Hospitality extended by health staff of government clinics is not satisfactory	37	20.1	135	73.4	12	6.5
Hygiene & place of government clinic is not satisfactory to vaccinate the child	28	15.2	138	75.0	18	9.8
There is a long waiting time at government vaccine clinics	54	29.3	114	61.9	16	8.7
There were bad effects due to previous vaccines taken from government clinics	20	10.9	152	82.6	12	6.5
Good quality vaccines are not available at the government sector	28	15.2	132	71.7	24	13.0
Expenses for vaccines are covered by parents' workplace	124	67.4	52	28.3	8	4.3
Vaccines available at the private sector as a "One Shot"/single dose	115	62.5	39	21.2	30	16.3
Vaccines which are not available in immunization programme can be obtained at the private sector	134	72.8	24	13.0	26	14.1

Table 3: Reasons given for not utilizing government/MOH facilities to vaccinate their children (N=164)

Response	Agreed		Disagreed		responded	
	No.	%	No.	%	No.	%
I was not adequately convinced about government vaccination programme by the PHM	30	18.3	94	57.3	40	24.4
I cannot take leave during government clinics days/time	90	54.8	52	31.7	22	13.4
No one to accompany the child during the visit to the government clinic	74	45.1	54	32.9	36	21.9
No one to look after other children at home during the clinic visit	40	24.4	76	46.3	48	29.3

Table 4: Association between receiving care at least once during pregnancy and postpartum period from government institutions and place of vaccination

Place of vaccination	Yes No. (%)	No No. (%)	Total No.	Significance
Ever been to a government health care institution during pregnancy				
Taken at least one vaccine for child from government sector	170 (92.4)	14 (7.6)	184	X ² =23.1 p<0.001
Never taken vaccine for child from government sector	121 (73.8)	43 (26.2)	164	
Ever been to a government health care institution during postpartum period				
Taken at least one vaccine for child from government sector	127 (69.0)	57 (30.9)	184	X ² =5.9 p=0.01
Never taken vaccine for child from government sector	89 (54.3)	75 (45.7)	164	

Figure 1: Proportion of children who ever received vaccinations at least one vaccine from government clinics at government

Figure 2: Persons who suggested private sector vaccination

Discussion

When the age of children in the sample was taken into consideration, it was found that 31% (108) of the children were less than 1 year of age. It reflects that parents seek private sector vaccine preferably for infant vaccines. Ethnic distribution of the sample was compatible with the demographic pattern of Western Province (9) (82% Sinhalese and 7% Muslims). Almost 60% of the children were not first-born babies, suggesting that parity of child does not influence the seeking of private sector vaccines by their parents.

When considering the educational level, 58% of the fathers had degree/diploma and it was 52% among the mothers. Only 38% had a monthly income Rs. >100,000. Hence, socio-economic factors have no major impact on seeking private sector vaccination. These findings were compatible with a previous study done by Agampodi et.al in 2007 (3). Further, the proportion of children who had only received private sector vaccines was 47% and the proportion receiving vaccines from both government and private sectors was 50%.

Majority of the parents who have used both government and private sector services for vaccines of National EPI

were satisfied with the welcome of staff in the government clinics, the hygiene and environment of the clinics, and the quality and safety of vaccines. Majority (80%) stated that there were no bad effects following government sector vaccinations, while 61% stated that expenses of vaccines in private sector were covered by their workplace. Other reason for seeking private sector vaccines is the availability of one-shot vaccines (combined antigen) in the private sector along with some extra vaccines, in addition to the vaccines in the national EPI.

One of the main reasons for parents to never visit government clinics for child vaccination was due to the clinics being held during working hours. Hence, the parents had to take leave with no one to accompany the child to government clinics in their absence and no one was there at home with the other children. This finding was compatible with the study done by Satyajit Pattnaik et al. in India (5). Also, a significant proportion of parents (50%) seeking private sector vaccination as per advised by paediatricians is compatible with the study done in India (8).

A higher percentage of mothers who had at least once received antenatal or post-natal care service from a government institution had given at least one vaccine

from the government sector compared to the other group of mothers who have not given even one vaccine from government clinics. This difference was statistically significant ($p < 0.05$).

The main limitations of the study were that the study sample and frame was confined to the children who have been registered by the PHM in the area. Further, a few families could not be approached by the PHM and their children's details were missing in the study. This was a shortcoming as the study instrument was an interviewer- administered questionnaire.

Conclusions & Recommendations

Majority of the parents in the study sample were well educated and occupying managerial or professional jobs with good family income. The preference to seek vaccines in the private sector was largely due to flexible hours in service availability and not based on a negative perception of the government health care provider, settings of government clinics or the vaccine side effects. A fair percentage preferred the availability of combined vaccines and additional vaccines in the private sector. A significant proportion of parents went for private sector vaccinations following advice from paediatrician. Results of this study will be beneficial both to the ground level health workers and health managers at the top level. This will ultimately improve the service provision at central as well as ground level.

Public Health Implications

In spite of having a well-organized Expanded Programme of Immunization in the government service including highly approachable well-trained staff in every MOH setting, approximately 40% of parents seek private sector immunization services largely due to availability of services during non-working times and a fair percentage preferred the availability of combined vaccines and additional vaccines in the private sector.

Author Declarations

Competing interests: The authors declare that they have no competing interests.

Ethics approval and consent to participate: Ethics approval was obtained from the Sri Lanka medical Association. Informed written consent was obtained from each participant prior to data collection. Permission to conduct the study was obtained from Regional Director of Health Services of Colombo.

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Author contributions: All the authors participated in the design of study, coordinated data collection and performed the data analysis. Interpreted the data and drafted the first version of the manuscript by ED and PK.

References

1. Colombo Epidemiology Unit. *National Immunization Schedule for EPI Vaccines, Sri Lanka*. Approved at the National Advisory Committee on Communicable Diseases, 2017. Available from: www.epid.gov.lk.
2. Epidemiology Unit. *Annual EPI Review 2016/2017*. Colombo: Ministry of Health, 2017.
3. Agampodi SB & Amarasinghe DA. Private sector contribution to childhood immunization; Sri Lankan Experience. *Indian Journal of Medical Science* 2007; 61: 192-200.
4. Zwi AB. Private health care in developing countries. *BMJ* 2001; 323: 463-464.
5. Pattnaik S, Selvaraj K, Midhun Kumar GH, Elango R. Why do some parents prefer private vaccine providers in urban area? *Journal of Family Medicine & Primary Care* 2015; 4: 606-607.
6. Howard DH & Roy K. Do vaccination and prenatal care rates differ between users of private versus public sector care in India? *Health Services Research* 2004; 39: 2013-2026.
7. Soeung S & Grundy J. Evaluation of immunization knowledge, practices, and service- delivery in the private sector in Cambodia. *Journal of Health, Population and Nutrition* 2008; 26: 95-104.

8. George MS, Negandhi P, Farooqui HH, Sharma A, Zodpey S. How do parents and paediatricians arrive at the decision to immunize their children in the private sector? *Human vaccines and Immunotherapeutics* 2016; 12: 3139-3145.
9. DCS. *Census Report*. Colombo: Department of Census and Statistics, Sri Lanka, 2012. Available from: <http://www.statistics.gov.lk/>.