

**CHILDHOOD IMMUNISATION: PARENTAL
ATTITUDES, VACCINE RELATED REACTIONS
AND THE PHARMACIST**

Jacqueline Azzopardi

Introduction

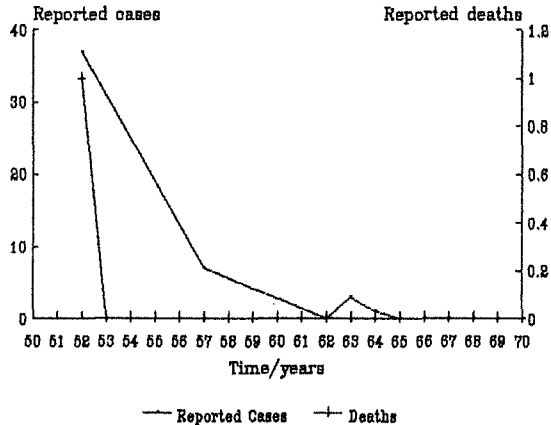
As a result of the Expanded Programme on Immunisation (EPI) of WHO and UNICEF, 80% of the world's children are now immunised against six leading childhood diseases (measles, poliomyelites, diphtheria, tetanus, pertussis and tuberculosis), as announced by the Secretary General of the United Nations in October 1991. This opposes the figures published in 1974, where 50% of children aged under 1 year were immunised, when EPI was established (Gillen, 1991).

Obviously, this figure also includes the Maltese child population. In fact the Department of Health, through its international connections with WHO, is today fully committed to the strategy of Health for All by the Year 2000 of which immunisation forms an integral part.

The impact immunisation has had on the epidemiology of disease in Malta is emphasised by records available at the Health Information Systems Unit (HISU) at St Luke's Hospital. As shown by Figures 1, 2 and 3:

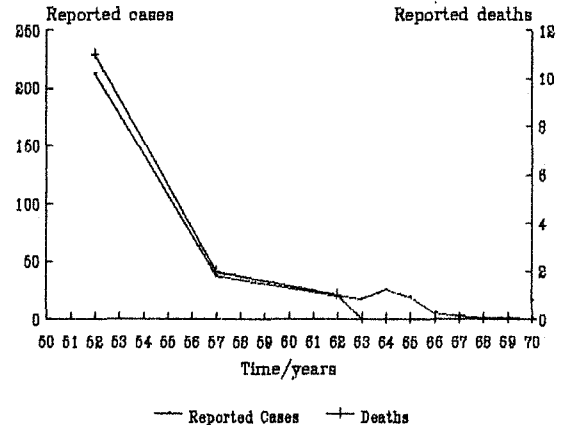
- i) the last notified cases of poliomyelites and diphtheria date back to 1964 and 1969 respectively;
- ii) notified deaths from these two diseases date back even further: 1952 for poliomyelites and 1962 for diphtheria;
- iii) measles and pertussis tend to occur in epidemics but in the last four years notified cases have been very low.

Fig. 1 : Notifications of New Cases and Deaths from Poliomyelites 1952-1970



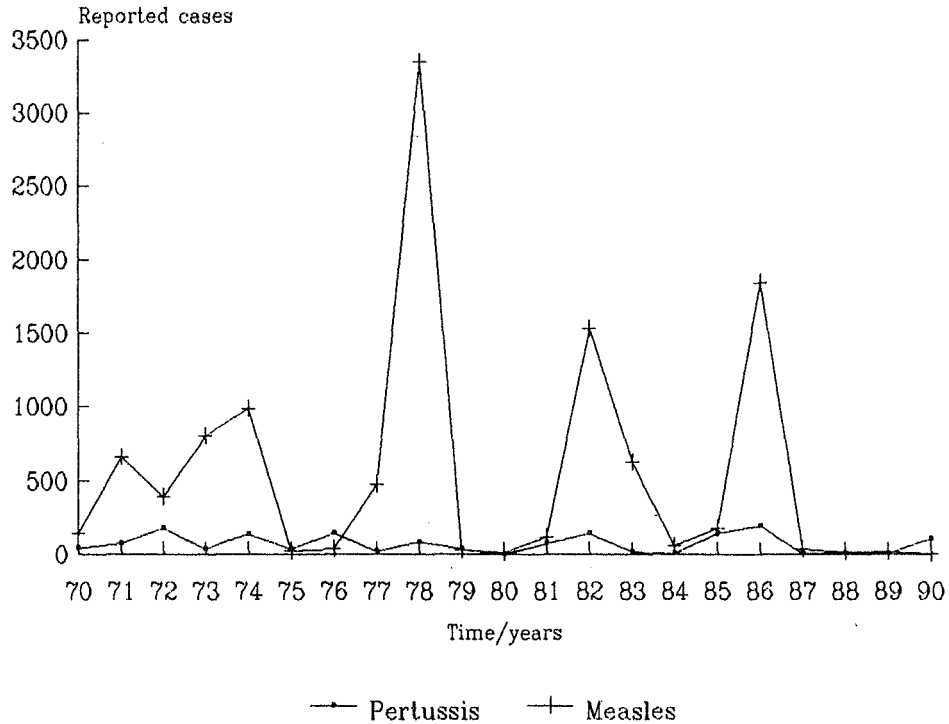
Note: Since 1970 no cases or deaths have been reported

Fig. 2: Notifications of New Cases and Deaths from Diphtheria 1952-1970



Note: Since 1970 no cases or deaths have been reported

*Fig. 3: Notifications of New Cases of Pertussis
and Measles 1970-1990*



For an immunisation programme to have such an impact on disease epidemiology, it must be based on an efficient Immunisation Schedule. Below is the immunisation schedule being followed in the Maltese Islands at the time of this study:

Vaccine	Age
a:	
DTP dose 1 + Polio	3 months
DTP dose 1 + Polio	4 months
DTP dose 1 + Polio	5 months
or	
DTP dose 1 + Polio	3 months
DTP dose 1 + Polio	4.5-5 months
DTP dose 1 + Polio	8-10 months
b: MMR	
DT + Polio booster doses	15 months
MMR to - unvaccinated children	4 years
- those who have had measles vaccine only	
Rubella in females	11 years
BCG	12-14 years
Tetanus + Polio	16 years

DTP: Diphtheria/Tetanus/Pertussis Vaccine

DT: Diphtheria/Tetanus Vaccine

MMR: Measles/Mumps/Rubella Vaccine

BCG: Bacillus Calmette-Guerin Vaccine

a: Since August 1990, the accelerated schedule for DTP vaccination was adopted due to a whooping cough epidemic. Before this date, DTP vaccination followed the same schedule as DT vaccination. The normal schedule was resumed in January 1992.

b: MMR vaccine was introduced instead of single measles vaccine in July 1990. An addition to the above schedule is the introduction of a booster dose at 12 years of age.

Immunisation in Malta is obligatory against diphtheria, tetanus and polio but only recommended against pertussis, measles in MMR form and BCG although parents are greatly encouraged to perform all types of immunisations.

The Maltese parenthood has two options for immunisation of a child:

- 1) attendance at a G.P. or Pediatrician of choice;
- 2) attendance at Free Immunisation Services (FIS) clinics which the Department of Health offers at Health Centres spread around the island.

As part of this project, the latter service has not only been closely followed and examined but has been utilised to perform the main studies of this project which included an assessment of -

- i) the attitude of the Maltese parenthood to immunisation and an estimation of their awareness on the necessity and importance of immunisation;
- ii) the incidence of reactions, if any, followed vaccination.

A further aim of this project has been to establish a role for the pharmacist in Malta's immunisation programme.

Methodology

Study 1

Parental Attitudes to Childhood Immunisation

A survey was conducted among 164 families randomly attending immunisation clinics for routine immunisation of one or more children at six Health Centres providing FIS over a 4 month period. The parents were interviewed in Maltese on the basis of a set of questions designed not only to estimate their attitudes towards immunisation but also their expectations on the immunisation programme.

Study 2

Surveillance of Reactions to Vaccines

Following vaccination with DTP (Diphtheria/Tetanus/Pertussis)/DT (Diphtheria/Tetanus) and MMR (Measles/Mumps/Rubella) vaccines, 93 children (58 females, 35 males) and 85 children (40 females, 45 males) respectively were monitored to investigate the development, if any, of reactions. The study was performed by telephone after obtaining the parents' consent. In both cases the parents were contacted on two occasions:

- DTP/DT Group: 24 hours and 48 hours after vaccine administration
- MMR Group: on the eighth day and at the end of the third week following vaccine administration.

Study 3

The Role of the Pharmacist in Immunisation

A questionnaire was distributed by hand and by post to 140 community pharmacists (70 answered) to assess whether a pharmacist has a role in immunisation and whether he/she is in a position to play such a role.

Table 1: Parents' Choice of Vaccine

DTP

REASON	%
more protection against disease	56.6
no contraindications	13.9
siblings had received the same vaccine	9.2
risk of adverse effects is low	3.7
whooping cough epidemic	4.6
choice based on advice given	5.6
relatives had given the vaccine with success	1.9
no particular reason	0.9
combinations of the above	5.6

DT

REASON	%
some contraindication	42
fear of possible reactions to DTP	40
based choice on advice given	4
siblings had received the same vaccine	2
vaccination was started late	2
fear of any reaction seen in other children	2
the child had contracted whooping cough	2
combinations of the above	6

Fig. 4: Knowledge On Vaccine Components

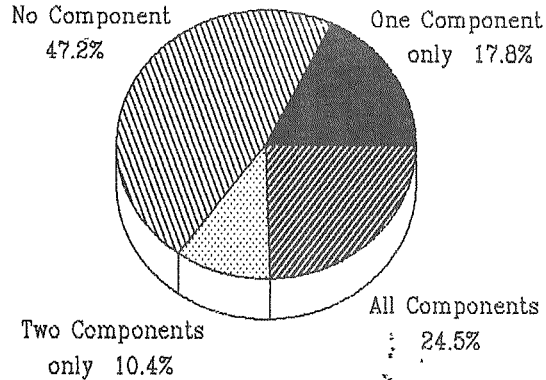


Table 2: Record Keeping By Parents

<i>THIS CHILD</i>		<i>SIBLINGS</i>	
<i>FORM OF RECORD</i>	<i>%</i>	<i>AVAILABLE FOR</i>	<i>%</i>
FIS card	91.1	all siblings	92.8
Private Doctor card	8.9	some siblings	3.8
		none of the siblings	3.8

Fig. 5: Delays in Vaccination Days

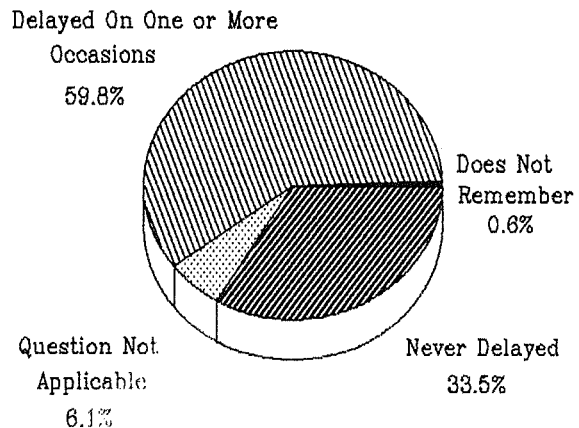


Table 3: Reasons for Vaccination Delays

REASON	%
illness of the child	70.4
the mother forgot/confused the date	11.2
the mother cannot always come on the appointed date	3.1
the mother was pregnant	3.1
the mother waits until someone can accompany her	2.0
started vaccination late and kept delaying	2.0
delayed not to disrupt family plans	2.0
other	0.2

*Fig. 6: Parents' Interest In Learning
More on Immunisation*

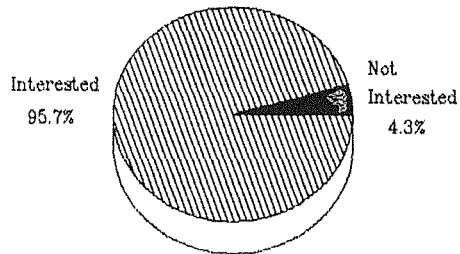


Table 4: Preferred Form of Information

FORM	%
leaflets	79.0
T.V. commercials	76.4
videos	74.5
picture booklets	29.3
charts	28.7
radio broadcasts	22.3
lectures	6.4
health visiting	2.5

*Table 5: Receipt of Health Education on
Immunisation by Parents*

YES N= 74 %=45.1		NO N=90 %=54.9	
SOURCES OF KNOWLEDGE	%	OTHER INFO SOURCES	%
antenatal courses	62.2	told to vaccinate after the child was born	34.4
literature	47.3	informed on the first post-natal visit	23.3
doctor's explanations during check-ups	9.5	relatives	22.2
the mother herself is a health professional	5.4	receipt of Health Department note	17.8
information given by other health carers	4.1	friends & neighbours	8.9
the media	1.4	just knew about immunisation	7.8

Study 2

Out of 93 children aged 3 months-6years receiving DTP and DT vaccine, the results were as follows:

SYMPTOMLESS

18.3%

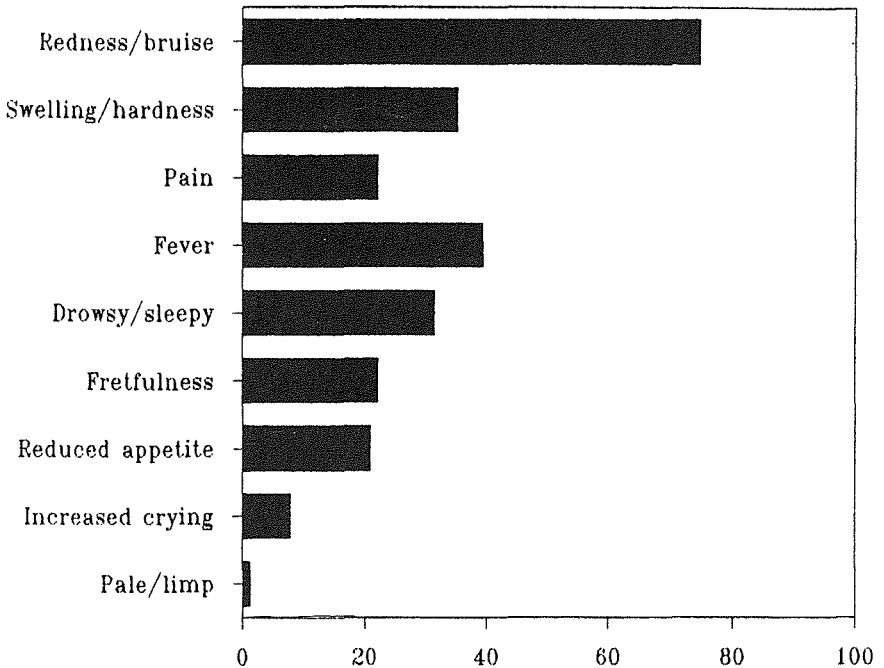
ONE OR MORE SYMPTOMS

81.7%

(DTP: 55.5%; DT: 44.7%)

Fig. 7: Nature of Symptoms in 78 Children

% Children Affected



Out of 85 children aged 15 months-12 years receiving MMR vaccine, the following results were obtained:

SYMPTOMLESS

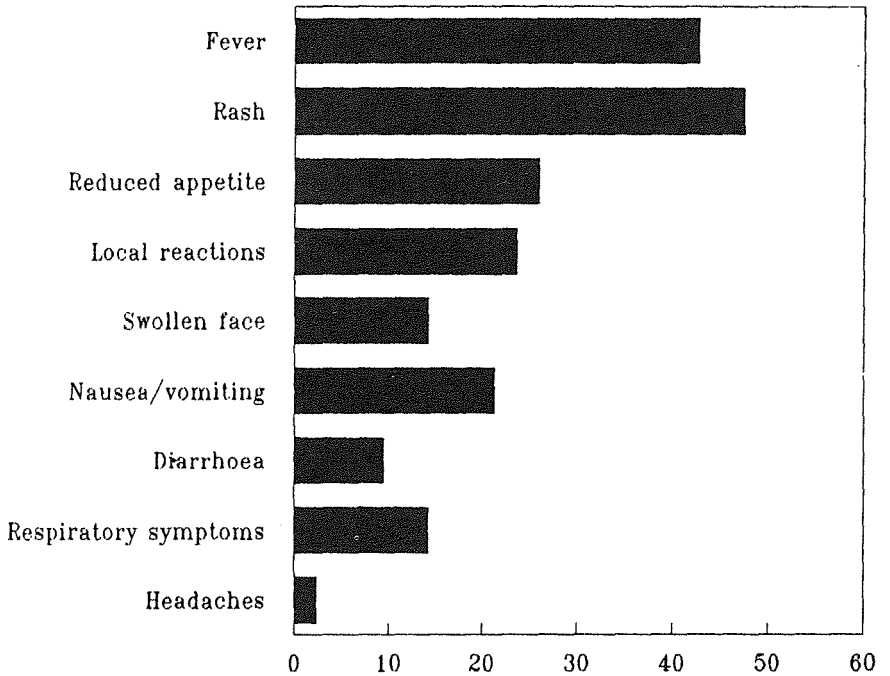
50.6%

ONE OR MORE SYMPTOMS

49.4%

Fig. 8: Nature of Symptoms in 42 Children

% Children Affected



Study 3

Other results of Study 3 include

- a) out of those pharmacists who were elicited help on immunisation problems (n=60), 86.7% were able to help and advice although the majority with difficulty;
- b) 98.6% (n=69) of the total pharmacists showed an interest in having leaflets for distribution in the pharmacy and 95.7% (n=67) thought that such leaflets would attract a mother's attention;
- c) the majority (51.4%) described pertussis vaccine as being moderately effective and out of these 80% (n=50) would recommend it to parents;
- d) 75.7% (n=53) considered adverse reactions to vaccines to be rare;
- e) with regards to contraindications to immunisation, 100% of pharmacists included one or more considered to be false contraindications (DHSS, 1990);
- f) illness of the child at the time of vaccination was described as being the main cause of delayed vaccination (84.3%). This compares with the main reason for delays in immunisation stated by parents (Table 3);
- g) 90% (n=63) of pharmacists expressed an interest in further knowledge and education on immunisation.

Discussion

Many parents still view immunisation as a potential hazard that should be avoided if some excuse should be found (Klein et al, 1989). In fact, many parents were found to be very apprehensive about immunising a child and this more often than not stemmed from poor knowledge and understanding on the parents' behalf regarding both

- 1) the disease concerned;
- 2) the process of immunisation itself.

This is also the reason why some parents fail to immunise their children against whooping cough. In recent years, there has been a lot of controversy about possible neurological damage thought to be caused by DTP vaccine and this has confused parents and health professionals alike (Nicoll, 1985). This is emphasised by the fact that the majority of parents (90%) questioned on the reason for refusing DTP vaccine stated invalid reasons: validity or invalidity of reasons was based on the United Kingdom's Department of Health and Social Security guidelines for 1990. Also, out of those mothers who had always delayed vaccination on one or more occasions, the majority gave invalid reasons for the delay. Further lack of knowledge was emphasised by the high percentage of mothers who -

- i) were unable to mention any of the vaccine components being administered to their child;
- ii) never received any form of appropriate health education regarding immunisation.

Reactions following the administration of vaccines was found to be another reason why parents tend to be so apprehensive regarding immunisation. Surveillance of reactions following DTP/DT vaccination revealed the occurrence of minor reactions only. No serious symptoms were reported i.e. no case of collapse, convulsions or encephalopathy occurred. Local reactions were found to be the most common (76.9%). The figure obtained was somewhat higher than that observed by Cody et al (64%) and Verschoor et al (66.2%) but a higher incidence of 85% was reported by Long et al (1990). The fact that only a small percentage of children developed fever might be attributable to the tendency of mothers (86%) to administer paracetamol prophylactically. Such a drug can influence temperature, pain and associated behavioural reactions. In fact, Verschoor et al (1991) reported 78.2% cases involving fever with only 11% of the children enrolled having received some drug. Therefore, on comparing with other studies, variations were observed in the incidence rates reported. Interpretation of data may be influenced by the composition of the vaccine used, the vaccination schedule and ages, definitions of possible reactions and the manner and frequency of observations (Verschoor et al, 1991). Besides, in this project, reactions were reported by the parents themselves who might have exaggerated or underestimated the severity of any symptoms.

Surveillance to MMR vaccination revealed rash, followed by fever, to be the most frequent symptom which developed a week after MMR vaccine administration. These symptoms were also reported as being common by Miller et al (1989). In their study, MMR and Measles vaccines were compared and incidence of both symptoms found to be comparable. Therefore, Miller et al (1989) state that the increase in symptom frequency about a week after MMR vaccination can be attributed to viremia from the measles component. In this project it was not possible to use a measles vaccine group as a control because since the introduction of MMR vaccine in July 1991, the percentage of children being immunised against measles alone is negligible. When faced with the choice, the majority of parents prefer the triple vaccine. Results of surveillance following MMR vaccine also vary between studies. In this project, the majority of children vaccinated proved symptomless (50.6%). Robertson et al (1988) described only about 10% of symptomless children while Peltola and Heinonen (1986), in a placebo-controlled twin study, found the actual incidence of reactions to be very low (0.5-4%) with some symptoms having a higher incidence in the placebo group. The results obtained in the Maltese children may have been influenced by the following factors:

- 1) the parents themselves have reported the symptoms and they may have overestimated any symptom;
- 2) children in the age group studied suffer from coincidental illnesses.

In this project the subject of immunisation has been dealt with from various angles. Therefore one can finally look into the role of the pharmacist. Vaccines are pharmaceutical products and the pharmacist must be duly informed about the different vaccines available, the necessary storage conditions and the frequency of any reactions following immunisation. However, the role of the pharmacist should not stop at this point: in fact, the majority of pharmacists questioned did not define the role of the pharmacist as that of procurement and storage of vaccines but mostly as an advisor and health educator for parents. The community pharmacist especially is in an ideal position for providing health education being in close contact with mothers of young children. However, the majority of parents questioned have never elicited pharmacists' help regarding immunisation and even though some pharmacists have been able to help on demand, the majority did so with difficulty since they did not consider themselves sufficiently informed. This can be remedied if the health authorities were to keep pharmacists

continuously informed about the Maltese Immunisation Programme, the current schedule and any changes brought about. Charts and leaflets should be available for distribution in pharmacies; these would not only act as a source of information for the young mother but would also help to involve the pharmacist in the immunisation scheme.

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