

Health Education Booklet about obligatory vaccination for mothers of under five children

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Abstract: The knowledge and practice of mothers is a crucial factor for better vaccination coverage. Previous studies revealed misconceptions of mothers' knowledge toward childhood vaccination. This study aimed at promoting childhood vaccination by providing knowledge about childhood vaccination through an educational booklet. Design Across-sectional study was conducted by using a convenience sampling technique on 383 mothers having children between 12 to 18 months old who admitted in Sinbelaween primary health care facilities. Data collection: Data was collected using pre-designed, pretested five questionnaires. The first three tools were used for exploring mothers' demographic characteristics, their knowledge regarding childhood vaccination as well as, their perceived practice before, during and after vaccinating their children. Moreover, the fourth and fifth questionnaires were used to explore the mothers and professional experts' opinions regarding the developed health educational booklet. Results: The study indicated that the highest percent (34.2%) of mothers were under educated which is the main reason for poor knowledge of childhood vaccination among (80.4%). Half of the studied mothers (55.6%) demonstrated unsatisfactory practices regarding their vaccination care delivered to their children. Conclusion: It is crucial to develop a health educational booklet to raise the mothers' awareness about obligatory childhood vaccination for more knowledge gain.

Keywords: health educational booklet, childhood vaccination, mothers' knowledge, perceived practice.

1. INTRODUCTION

Annually around 2 million children are dying before they complete 5th birthday in the low and middle-income groups (Jose et al. 2013). Immunization is the cost-effective safest and efficient health investments of saving millions of lives and averting morbidity, mortality, and disability by vaccine-preventable diseases. WHO has launched in 1974, an expanded program of immunization (EPI) against 6 vaccine-preventable diseases (VPD) to reduce childhood mortality and morbidity i.e. BCG, DPT, OPV, TT was come into practice in India by 1978 (Paul, 2013).

According to the 1998 Annual Report about the expanded program on immunization (EPI), a mission was determined to extirpate, override or reduce diseases to the lowest sphere possible through sustained immunization of all susceptible as an essential element of Primary Health Care. However, studies have inferred that these objectives have not been accomplished despite the efforts of more than 20 years by EPI. In response to the Global Vaccine Action Plan achievement plateau, 194 Ministers of Health endorsed a new resolution on strengthening immunization to achieve the goals of it. The resolution targeted strengthening the governance and leadership of national immunization programs, and improve monitoring and surveillance systems to ensure up-to-date data guides policy and programmatic decisions to optimize performance and impact. It also calls on countries to expand immunization services beyond infancy, mobilize domestic financing, and strengthen international cooperation to achieve GVAP goals (World Health Organization (WHO) 2016).

Globally, millions of children are not immune, predominantly in developing countries, in respect of immunization issues, which are the most prevalent factors that lead to vaccination coverage rate. Also, the WHO has estimated that services accessibility, parental attitudes, knowledge, and practices appears to assimilate a chief role among children who have not completely immunized (WHO 2012). The knowledge and practices of parents have also been identified by many studies as factors related to the success or failure of the immunization program (Adhikari et al.2006, Anjum et al. 2004, and Salam et al. 2013). Previous studies revealed that, parents' knowledge and practice regarding immunization were significantly associated with childhood immunization coverage and can affect the immunization status of children (Salam et al. 2013 and Amin et al. 2013). It was found that parents' knowledge and practice towards vaccinating their children depends on the quality of information provided to them by health care providers about the importance, timing of their children vaccination. As well as, healthcare providers play an important role in the rate of immunizing children (Zagminas et al. 2007 and Al-Iela et al.2012). In the highlight of what have been mentioned before, the present study was conducted to design a health educational booklet regarding childhood vaccination to be used as a tool for assuring more mothers knowledge gain, and probably improve retention.

2. SUBJECT AND METHODS

Study design:

The study was selected to be cross sectional design, which was chosen for investigating the under-five year's children mothers' knowledge and practice regarding obligatory childhood vaccination.

Setting:

The study was undertaken at 17 Sinbelwain city's primary healthcare centers in El dakahlia Governorate.

Subjects and sampling:

A. Mothers of children under five years:

The sample size was 383 mothers of children under five years from the above-enlisted centers, this number was drawn by convenience sampling technique. Size of the target group calculated to be 383 when the population size of children aged up to 5 at El-Simblwain district = 74005 children, and desired precision= 5%, expected prevalence of correct knowledge and practice= 50% and design effect= 1.

B. Academic community health nursing experts

Fourteen professional academic experts agreed to provide their feedback about the developed booklet; besides, one hundred of mothers. This number of evaluators was sufficient to provide a feedback for content validity of the intended booklet according to (Elo et al., 2014).

Process of health education booklet development and evaluation:

The action research method was pursued during the whole development process of the booklet. The master presupposition of this method is the building of knowledge in multilateral and participatory ways, for discovering a solution for issues that need to be resolved. The solution found can produce positive reflexes for individuals, families, and the whole community (Reberte et al.2012). This process was formulated of five stages (Figure 1), completed in the period from January 2018 to June 2019.

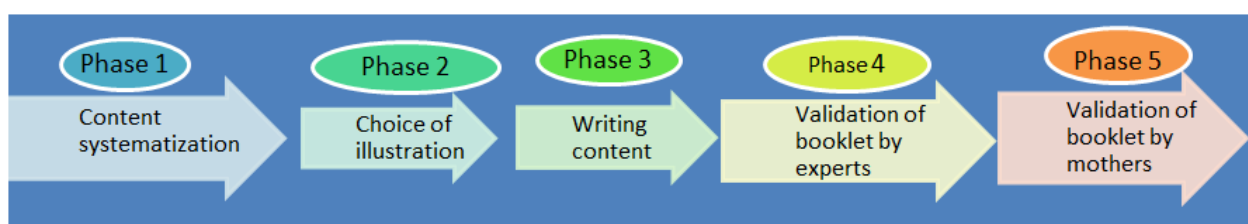


Figure (1): The booklet designing process

A. Health educational booklet development:

1. The first stage was directed to explore the children's mothers' knowledge and practice regarding obligatory childhood vaccination by including three tools in the preliminary assessment. The first one was "*Self-administrated Socio-demographic characteristics questionnaire.*" This questionnaire made up of two parts: the first part was used to assess demographic data of mothers (age, sex, residence). The second part was utilized to determine occupational characteristics (qualification, occupation). The second interview was "*Structured interview to assess mother's knowledge*" that was designed to test mothers' knowledge about vaccination benefits, side effects, contraindications...etc. The interview formulated from 46 questions (4 multiple choice and 42 yes & no questions) one mark awarded for each correct answer. The third tool was "*Structured interview to assess mother's subjective practices.*" that was created to examine mothers' practice with 18 questions (Done and Not done questions). Correct response scored= (1), while an incorrect response scored = (0). The total score of knowledge was arranged into three levels. They were a poor score = less than 50% of the total score, a fair score = 50 to 65% of the total score, and a good score = more than 65 % of the total score.

Tools validity and reliability:

Before data collection, all study tools were tested for its content validity and reliability by five expertise in the field of the study, besides, 10% of study sample (38) mothers. Based on the finding of the evaluation, the necessary modification was done, some questions were added and others were clarified or omitted.

2. In the second stage, text books, images, graphs were searched in many electronic database as Medline; Google Scholar and ProQuest, in order to find better illustrations. The search in these databases intent to broaden the scope of the research and minimizing possible biases. The utilized signifiers were: nursing, educational booklet, and childhood vaccination.

3. In the third stage, the preliminary educational booklet content was developed with attention given to the information considered as essential, updated and clear. The development of this content was based on the criteria previously established for the whole booklet developing process, i.e., matched to the native culture, easy reading, and concise. The first leaflet of the booklet was submitted to the evaluation of experts who validated it.

B. Health educational booklet evaluation:

4. The evaluation process was accomplished by two tools. In this fourth stage, it was concerned about Expertise' opinion, by using pre-validated checklist was "*Expertise opinion' checklist for evaluation of the developed educational booklet.*" This tool was utilized to obtain experts' opinion about the developed booklet before building of the final Vaccination booklet version. This checklist was consisted of 49 closed question with yes or no response and the question number 50 was open ended question about any comments or suggestions. All tool questions were related to the booklet content, literary presentation, Illustrations, and legibility and printing characteristics.

5. In the fifth stage, the children mothers were asked to evaluate the developed booklet by using "*Self-administrated mothers' feedback assessment questionnaire*" They were requested to read the booklet and analyze it in terms of understanding the vocabulary, as well as, the adequacy of its illustrations. They were also requested to indicate the unknown or difficult terms, and to suggest other substitutive terms considered easier and understandable. Any specific modifications and comments from the mothers and professional experts were documented and considered in the formulation of the final version of the booklet.

Statistical analysis:

Statistics in the form of simple frequency tables for nominal and categorical variables and arithmetic mean \pm standard deviation for continuous variables were calculated after analyzing data by SPSS (Stand for Statistical Productive and Service Solution).

Ethical considerations:

- Ethical approval was obtained from the research ethics committee that affiliated to the Faculty of Nursing- Mansoura University. Informed written consents were obtained from children's mothers to participate in the study after illustrating the purpose of it. Confidentiality of the data was ensured, and research ethical principles were followed (Etene, 2009 and World Medical Association, 2011).

- An official approval from the dean of Faculty of Nursing- Mansoura University and the vice dean for higher graduate studies was submitted to MOHP Directorate to obtain approval for conducting the study at the selected primary healthcare facilities.

3. RESULT

Results divided into three parts; firstly, the results of pre- education booklet development (needs assessment). Secondly, description of the developed health education booklet, and finally, the health education booklet revision and evaluation of the content validity.

3.1. Preliminary assessment:

The characteristics of the included mothers are shown in **Table 1**. The age of the respondents was 18->28 years old among (53.3%) of the mothers with mean of 26.87 ± 5.63 . Regarding educational level, more than third of the respondents were diploma (34.2%) and 27.9% had bachelor degree. Concerning residence, two third of the respondents (65.0 %) live in rural areas. The studied mothers also indicated that radio was main source of information about vaccination among (40.5%). The table also reveals fathers characteristics. For father education, 34.2% of them were only diploma. Finally, regarding fathers occupation, 42.8% of them were the clerks.

Table (1): Distribution of the studied children's mothers according to their demographic and occupational characteristics:

Demographic and occupational characteristics	N=(383)	%
Age		
18- >28	204	53.3
28- >39	170	44.4
39->50	9	2.3
$\bar{x} \pm SD$		26.87 ± 5.63
Father education		
Illiterate	38	9.9
knows writing & primary	42	11
Preparatory	52	13.6
Secondary	131	34.2
Institute	47	12.3
University	73	19.1
Mothers education		
Illiterate	26	6.8
knows writing & primary	19	5
Preparatory	46	12.0
Secondary	128	33.4
Institute	57	14.9
University	107	27.9
Health education methods		
Books	5	1.3
Booklets	39	10.2
Posters	31	8.1
Radio	128	33.4
T.V	180	47.0
Father' occupation		
Not worked	28	7.3
Free work	81	21.1
Clerk	164	42.8

Other	110	28.7
Mother' occupation		
House wife	256	66.8
Worker	37	9.7
Clerk	51	13.3
Other	39	10.2
Residence		
Urban	103	26.9
Rural	249	65.0
Slums	31	8.1
Number of family member		
3-5	316	82.5
> 5	67	17.5

Table (2) reveals that third of the respondents showed poor level of knowledge related to vaccination importance, BCG, and measles vaccines categories. Concerning the rest of obligatory vaccines, the percentages of mothers' poor knowledge score in descending order were 91.1% for "DPT vaccine," 93.0% for "Hepatitis B vaccine," 90.9% for "MMR vaccine," and 94.8% for "PENTA vaccine". In addition to, less than half of them exhibited level of knowledge less than 50% regarding vaccination precautions and contraindications. Totally, this table presents that 80.4% of them showed poor score of knowledge with mean score of 18.58±13.26 points.

Table (2): Distribution of the studied mothers according to their knowledge about vaccination importance, side effects, contraindications, precautions and obligatory vaccines):

Knowledge categories	□± SD	N=383					
		(Poor<50%)		(Fair 50-65%)		(Good>65%)	
		N	%	N	%	N	%
Importance of vaccination (score= 4)	1.45±1.9	244	63.7	0	0	139	36.3
Vaccination precautions (score= 4)	1.87±1.176	168	43.9	115	30.0	100	26.1
Vaccination contraindications (score= 4)	1.71±1.77	188	49.1	105	27.4	90	23.5
vaccination side effects (score =8)	4.07±2.17	150	39.2	127	33.2	106	27.7
BCG vaccine (score= 4)	1.44±1.86	239	62.4	10	2.6	134	35.0
OPV polio vaccine (score =4)	1.075±1.27	315	82.2	10	2.6	58	15.1
DPT vaccine (score =4)	.428±1.116	349	91.1	2	.5	32	8.4
Measles vaccine (score =4)	1.32±1.72	260	67.9	7	1.8	116	30.3
Hepatitis B vaccine (score =4)	.3055±.9778	356	93.0	4	1.0	23	6.0
MMR vaccine (score= 4)	.36±1.09	348	90.9	3	.8	32	8.4
PENTA vaccine (score =4)	.19±.84	363	94.8	3	.8	17	4.4
Total knowledge score = (63)	18.58±13.26	308	80.4	42	11	33	8.6

Table (3) illustrates that more than half of the studied mothers (58.5%) showed unsatisfactory score level related to their pre-vaccination practice as dressing their children suitable clothes, and distracting their attention by different techniques. Concerning the mothers practice during vaccination session, majority of them demonstrated poor practice score among (82.0%). In contrast, three fourth of the studied mothers demonstrated satisfactory practice regarding management of post-vaccination side effects, and appropriate reporting to doctors in case of severe reactions. Globally, more than half of the mothers showed unsatisfactory score among (55.6%) with mean 15.31±3.51 points.

Table (3): Distribution of the studied mothers according to their practice before, during, and after vaccinating their children:

Items of vaccination process	□± SD	Studied childhood mothers(N=383)			
		Satisfactory (≥65%)		Unsatisfactory (<65%)	
		N	%	N	%
Before administration of vaccine(score= 9)	6.55±1.74	159	41.5	224	58.5
During administration of vaccine(score= 6)	4.36±1.078	69	18.0	314	82.0
After administration of vaccine(score= 6)	4.39±1.49	288	75.2	95	24.8
Total mother practice score =(23)	15.31±3.51	170	44.4	213	55.6

3.2. Description the developed health education booklet

The designed health educational booklet which is the main output of this study, constructed based on the preliminary assessment of mothers of under five children knowledge and practice regarding the obligatory childhood vaccination. The general aim of this health education booklet was to provide concise, comprehensive and updated information about the main issues of the obligatory vaccination for mothers of under five children for reinforcing their knowledge and upgrading their practice.

Description of the contents by the booklet’s topics:

<i>Domains</i>	<i>Contents description</i>
<i>Importance of vaccination</i>	Addressed the main benefits of administrating vaccines, in addition to illustrating each one.
<i>Vaccination contraindications</i>	Addressed the main conditions that contradict administering childhood vaccines.
<i>Vaccination side effects & its management</i>	Described the most common vaccination side effects, besides its management techniques.
<i>The diseases controlled by childhood vaccines</i>	Illustrated the main diseases that prevented by obligatory vaccines: its causes, mode of transmission, clinical manifestations and complications
<i>The mothers role before, during, and after vaccinating the children</i>	Demonstrating The mothers’ duties and responsibilities before, during, and after vaccinating their children.

Diagram (1) reveals that all experts stated that the topic of developed booklet is significant for the mothers of children under five years. Also most of them (92.9%) mentioned that the booklet objectives were SMART (specific, measurable, agreed upon, realistic and time bond). Concerning booklet' content, 85.7% of experts agreed on the content is sufficient to achieve the stated objectives. More ever, most of them stated that the booklet is understandable, updated, and concise. Besides, all of them mentioned that content is matched to the native culture. Regarding literacy presentation, most of the experts referred to sequence of information are consistent, and composed of simple words. For illustrations, all of them agreed on booklet's illustrations are simple, appropriate, and understandable. Totally, most of experts (92.9%) revealed the printing and legibility characteristics of the designed booklet is appropriate.

3.3. Post-booklet development revision and evaluation:

1. Experts' evaluation of the developed booklet

Diagram (1): Distribution of experts' evaluation regarding to the printed materials of the developed booklet about childhood vaccination (N=14).

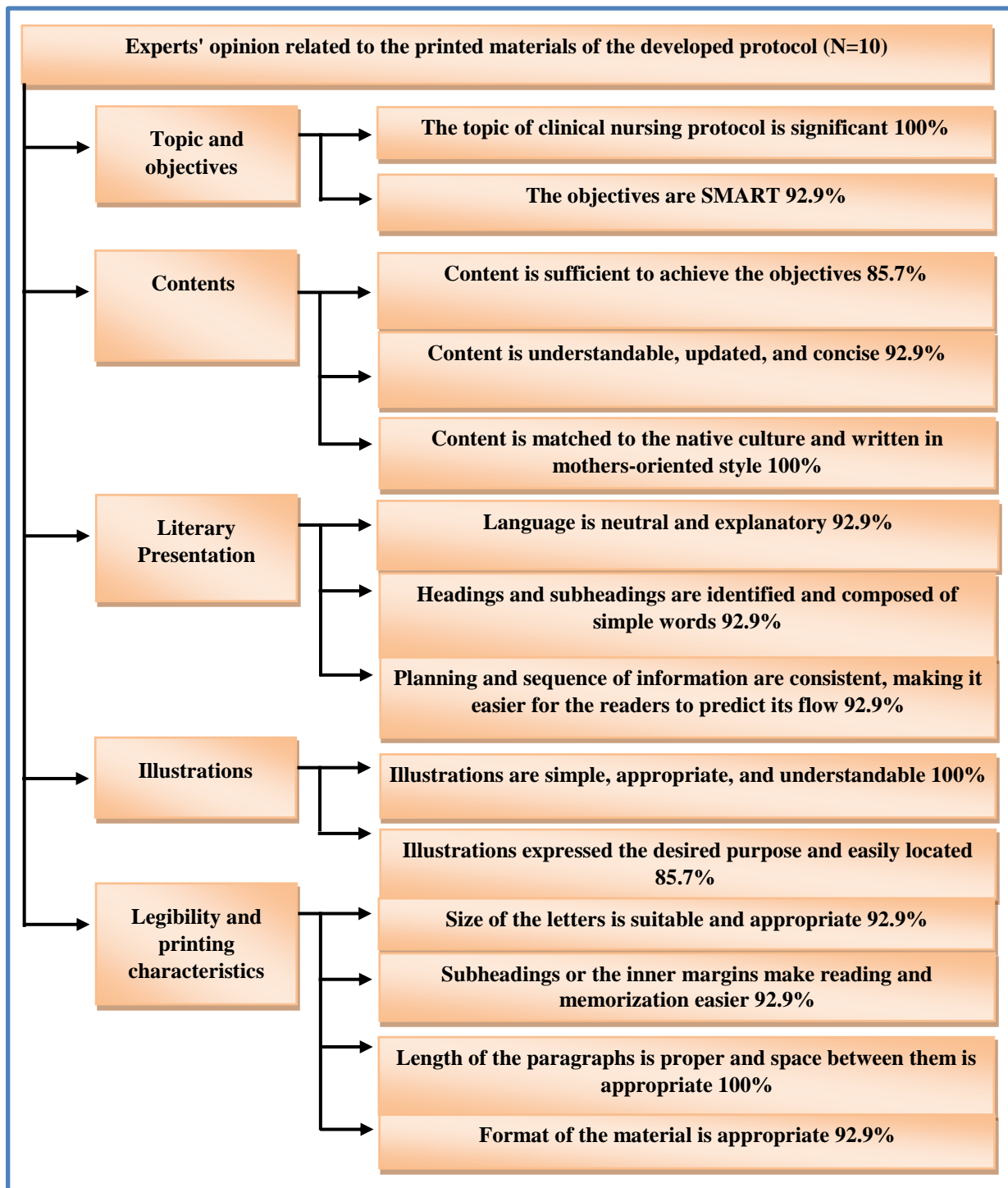
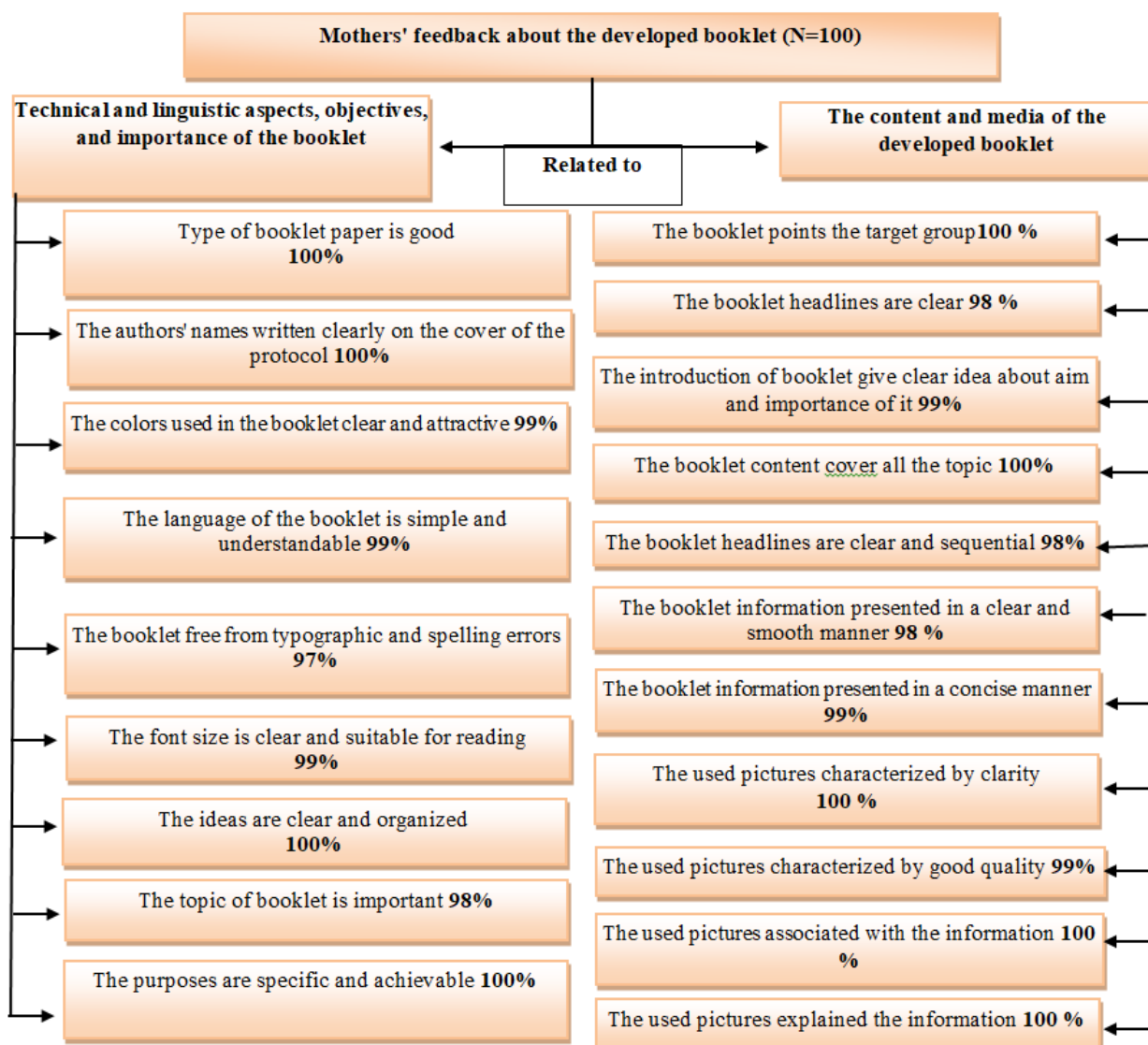


Diagram (2) indicates that all of the studied mothers mentioned that the booklet papers type is good, besides, the booklet cover is interesting, attract attention and the authors' names is clearly written on it. Regarding linguistic aspects of the booklet, most mothers (99%) reported that language is simple, understandable, and free from typographic and spelling errors. While the majority of them (99%) stated that the language of the booklet is simple. Concerning the booklet content, all mothers (100%) illustrated that the booklet purposes are specific and achievable, in addition to, the booklet content cover all the topic, moreover, most of them stated that booklet information is clear, concise and, presented in smooth manner. Regarding the used media, all of mothers agreed on the used pictures characterized by clarity, good quality, and explained the information.

2. The mothers ' feedback about the developed booklet

Diagram (2): Distribution of mothers' feedback evaluation regarding to the printed materials of the developed booklet about childhood vaccination (N=100).



4. DISCUSSION

The childhood vaccination has indicated significant aspects of disease and death prevention during the preceding decades especially among children under five years old. Thus, the knowledge and practice of mothers toward vaccination is remarkable issue to reinforce the children wellbeing as well as diseases forbidding.

Regarding the socio-demographic characteristics of studied mothers in the current study revealed that up to 75% of mothers in the current study had at least secondary education. This indicates acceptable educational level of the population studied which explains why more than half could mention the vaccination side effects, contraindications, and precautions. Furthermore, they were more likely to take their children to vaccination centers for immunization at the appropriate age. Besides, highly acceptance of immunization campaigns. According to **Tagbo et al.2012**, there is a statistically significance relationship between maternal education and their knowledge, perception and practice level of vaccination. However, this finding is inconsistent with the study of **Manjunath et al. 2003**, which conducted in Pilani, India where the literacy rate did not significantly influence immunization coverage rates.

As regards to the level of mothers' knowledge, which is a crucial determinant of the vaccination coverage. The present study revealed that a high percentage (63.7%) of mothers didn't know vaccination importance, besides, up to 90% reported inadequate knowledge to hepatitis B, MMR, DPT, and PENTA vaccines. This knowledge therefore accounts for the overall "poor" knowledge rated among the sampled women (80.4%). It was alarming however that only (8.6%) of the mothers had excellent knowledge about all the vaccine preventable diseases (VPDs) children are immunized for. This discovery calls for targeted information, education and communication. These finding were in agreement with two conducted studies that were conducted in Egypt as **Abd Erahman (2013)** in el Minia city, Egypt, Who found that the knowledge score was lower in those women who didn't have education or have low educational standard and **Ramadan (2016)** at mother home in Damietta Governorate, Egypt, during the year 2015, who was found inadequate knowledge and limited practice in relation to obligatory vaccination.

The mothers' efficient practice is a corner stone for success vaccination programs. Therefore, it was crucial to evaluate mothers' practice. The current study revealed unsatisfactory score of vaccination practice among (55.6%) of the studied mothers. This finding is observed in consistent studies as the one conducted by professor **Bofarraj 2011** in Al-Beida, Libya. In addition to, the second study of **Nisar et al.2010** which implemented in Karachi on one-year old child, and revealed limited practice for mothers regarding childhood vaccination. This interpretation is alarming for immediate corrective interferences. Consequently, it was conclusive to establish an educational booklet regarding childhood vaccination for reinforcing the mothers' knowledge and upgrading their practice.

The written materials are an effective education-teaching strategy and all information should be reciprocal, valid and destined level appropriate for the general population. The result of study executed by **Friedman et al.(2010)** congruent with the findings of the present study who stated that most of experts mentioned that the content is sufficient to achieve the objectives, appropriate to the level of understanding, updated, concise, relevant to the objectives and written in a mothers' oriented style. more ever, These findings are in the same harmonious with **Aldridge (2004) and Monsivais & Reynolds (2003)** studies who revealed that in constructing written educational material, consider using attractive colors that are appealing to your target audience. Using of bolded subheadings to separate and highlight sections and, when possible, spell out fractions and percentages it makes the text easier to read and understand.

5. CONCLUSION

Based on the findings of the present study, it could be concluded that majority of the studied mothers (80.4%) indicated poor score of knowledge and limited practice among (55.6%), consequently, It was crucial to develop a health educational booklet to raise the mothers' awareness about obligatory childhood vaccination for more knowledge gain and upgrading their practice.

6. RECOMMENDATION

- There is a need to arrange for health education program sessions for mothers of under five children with main emphasis on importance of vaccination & vaccine Preventable Diseases (VPDs). Social media was the most important source, which can be used for spreading health education massages.
- Dissemination of the designed health education booklet is recommended to evaluate its effect on mothers knowledge and practice regarding childhood vaccination.

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