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Using Conjoint Analysis for the Sustainability of the Buku KIA (Maternal and Child Health Handbook) Program in Indonesia

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ABSTRACT

To inform Indonesian government considerations regarding continuation and financing of its Buku KIA (Maternal and Child Health Handbook) program after JICA support ended, 143 staff from four public health system levels in three provinces each ranked 27 cards describing various potential features of MCH Handbook continuation. They plus 56 mothers and 51 community MCH volunteers also ranked 27 other cards regarding mothers' views. Conjoint analysis indicated similarities among all groups as to factors most influencing their preferences, but differences in their preferred answers and characteristics. For example, health staff care "who" would be key in a continued program, but each staff group gave priority to its own level, except health center staff who favored the province level. Implications and suggestions to encourage sustainability are discussed in the context of Indonesia's now decentralized public health care system and the importance of health center directors as managers and decisionmakers within it.

コンジョイント分析を用いたインドネシアにおけるBUKU KIA（母子健康手帳）プログラムの持続可能性に関する研究

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要旨

インドネシアの母子保健状況の特徴は、妊産婦死亡率が高い点である。その状況改善のために、母子健康手帳（Buku KIA）プログラムがJICAの協力のもと、1993年より開発・試行されてきた。2002年までにインドネシアの25州に広がり母子健康手帳が多くの妊婦や子供に利用されている。

このプログラムの持続可能性を評価するために、2003年2～3月、インドネシア3州のステークホルダー（保健医療スタッフ、母子保健ボランティア、母親など）合計254名を対象に調査を実施した。対象者には、母子保健手帳に関する27枚のコンビネーションカード2種類を各々の優先順位に従い並べ替えてもらい、個人やグループのある事象に対する優先度や選好を計測するコンジョイント分析にて解析した。その結果、母子保健手帳の継続に関し、予算の面で州レベルにドナー依存がより強いこと、また同手帳の配布拠点の要である診療所(Puskesmas)で、手帳販売による利益を一般予算に利用したいという意向がより強いことなどが明らかとなった。

I. INTRODUCTION

Indonesia is the largest archipelago in the world, with 17,508 islands spread between the Asian continent and Australia and between the Pacific and Indian Oceans. The population is 228 million (2006), with a growth rate of 1.5%. The islands are inhabited by 365 ethnic and tribal groups with diverse cultures. They speak 583 languages, although the national language, Bahasa Indonesia, is spoken throughout the country. The other principal languages are Acehnese, Bataks, Minangkabaus (all in Sumatra), Javanese, Sundanese (Java), Balinese (Bali), Sasaks (Lombok), and Dani (Irian Jaya). The population is 87% Muslim, 9% Christian, 2% Hindu, and 2% others and unspecified (Population Resource Center, 2004).

An important objective of the government of Indonesia is to reduce the maternal mortality and under-five mortality rates as much as feasible in the shortest possible time. One of the strategies to achieve this has been the development of an integrated management approach within the health system, including hospitals, health centers, and the community and family levels (JICA, 2005). Therefore the Ministry of Health of Indonesia, in collaboration with the Japan International Cooperation Agency (JICA), developed a strategy for integrated maternal and child health services using an MCH Handbook. The aim of this strategy is to improve the quality of MCH services, providing better access to MCH services and educating the community and family as to how and when it is appropriate to seek care (including preventive services) or to practice home care (JICA-Indonesia, 2005) .

Since its successful beginning in a pilot area with a population of 150,000 in Indonesia's Central Java Province in 1993, the Maternal and Child Health Handbook Program first expanded to cover two thirds of the province's population, then all 35 of its districts/municipalities and the cities of Central Java Province, and finally to cover other provinces. By 1998, the program covered a population of 18 million (Osaki et al 1998).

In 1997, Indonesia's Director General of Public Health, considering the "concept" of MCH Handbook applied in Japan, developed a "generic" Indonesian MCH Handbook, combining both health education and health record functions and with various original aspects. The handbook was intended for use at the family level in a health care system emphasizing primary health care and for adaptation to meet the specific needs of each province. As of December 2002, the MCH Handbook had been introduced and distributed in 25 of Indonesia's 30 provinces.

Osaki et al (1998) delineated five points that they felt contributed to the success and expansion of the program

Firstly, the program's concept, the sense of ownership toward the program

and the consideration of its adaptability to local sites were correct. Secondly, there was a need for this program in each related group, namely policy-makers, implementing personnel and its beneficiaries. Thirdly, resources and infrastructure were adequately arranged to support community health services. Fourthly, efforts were made to ensure the sustainability of the program and finally, the role of catalyst in the program was performed effectively by the Japanese side.

Ⅱ. OBJECTIVE

To ascertain staff, client and MCH volunteer views of and preferences regarding options (including user fees) for expansion of MCH Handbook use in Indonesia after the end of JICA funding for the program.

Ⅲ. STUDY AREAS AND SAMPLES

Six districts in 3 provinces were selected as the study areas: Badung and Gianyar districts in Bali Province, Mojokerto and Blitar districts in Java Timur, and Kulon Plogo district and Yogyakarta City in Yogyakarta Province. All were in areas of the island of Java in which the program had been implemented since the early 1990's.

The 254 participants were selected from seven groups at six levels: there were three from the central Ministry of Health office responsible for the project, 12 from the 3 provincial health offices, 18 from the 6 district/city health offices, 47 directors and 67 midwives from health centers (*Puskesmas*), and 51 MCH volunteers (*Kaders*) and 56 mothers from the selected districts (Table 1).

Table 1 Numbers of Participants in the Simulation, by Levels

Card	MoH	Province	District	Health Center Director	Health Center Midwives	MCH Volunteers	Mothers*	Total participants**
A	3	12	17	47	64	---	---	**143**
B	3	11	18	46	67	51	56	**252**

*Note: "Mother" includes currently pregnant women and women who delivered within the last five years, all of them with experience with the MCH Handbook.
**Note: Total participants were 254; however, two provincial health officers only answered Card A but not Card B.

Ⅳ. ABOUT CONJOINT ANALYSIS

Conjoint Analysis (CA) provides an efficient way to learn about and compare different groups' perspectives regarding the relative importance of several sets of questions in the provision of a good or a service and also indicates their preferred

answers to those questions (Ryan 1999).

CA is an application of "Multi-attribute Utility Theory"[2]. CA has been widely accepted and applied in marketing research, transportation and environmental work since the 1970's, especially for practical decisions (Cattin 1982). In the United States CA has been used by non-economists within the area of health care to examine factors important to patients in the provision of health care services (McClain, 1974; Parker, 1976; Wind, 1976; Chakraborty, 1993). In the UK it has been used to estimate the monetary value of reducing time spent on waiting lists (Propper, 1990), the trade-offs individuals would make between the locations of clinics and waiting time in using orthodontic services (Ryan, 1997), and patient preferences in the doctor-patient relationship (Vick, 1998).

V. METHODS

1. ESTABLISHING THE QUESTIONS

Two scenarios were prepared and used with members of seven groups at six health

Table 2 Simulation "A" Cards: Sustainability and Continuation or Expansion of Use of MCH Handbook - Views of Civil Servants *

Questions ("Attributes"), for each of which one "Answer" is included on each card**	Answers ("Levels"), one of which appears on each card for each question*
1-Who is the key person to sustain this MCH Handbook program?	1-1 Ministry of Health
	1-2 Province
	1-3 District local governor
	1-4District health office
	1-5 Health centers
2-Who will take the major role in financial support to continue the MCH Handbook's production, distribution and use?	2-1 All Province budget
	2-2 Province budget > Donor support
	2-3 Province budget and Donor support, equally
	2-4 Province budget < Donor support
	2-5 All Donor support
3-What is the amount of the user fee you expect to collect from mothers?	3-1 Free of charge to all mothers
	3-2 Rp.2,500 ***
	3-3 Full cost ****
4-Which is the best use for the money collected as user fee for the MCH Handbook?	4-1 Deposit fee at district local office and use it to print Handbook
	4-2Deposit the fee at district health office and use it to print the Handbook
	4-3 Keep fee at health center and use it as general budget
	4-4 Use it to subsidize/provide free health care for the poor
5-Do you think the handbook improves mothers' knowledge and positively changes their behavior?	5-1 Improvement
	5-2 No improvement
6-Do you think it is necessary to provide a training to your staff and/or MCH volunteers for the Handbook's sustainable use?	6-1 Training necessary
	6-2 Training not necessary

Note*: Instruction to participants for use of the cards: "In September 2003, JICA funding for the MCH Handbook project will end. What is the best service package/combination to sustain and expand provision of the MCH Handbook after that? Please rank these 27 cards according to your preferences."

Note**: Each card contains one pre-selected answer per question. The combination of answers on each card was selected statistically by SPSS to produce an orthogonal design suitable for Conjoint Analysis.

Note***: Rp (Indonesian currency Rupia) 2,500 was equivalent to 0.25 US dollar in February 2003.

Note****: Full cost of the MCH Handbook depended on the districts/municipalities, and each group of respondents was informed before sorting the cards of the specific cost of the Handbook in their district or municipality. The average full cost was Rp.4000 (0.40 US$).

system levels. The first scenario, regarding "Sustainability", was used with five of the seven groups, excluding mothers and MCH volunteers. In discussions with the MOH, JICA and others, six questions for the first scenario and card set, along with alternative answers to each question, were selected on the use, management and financing of the MCH Handbook. They are shown in Table 2.

The second scenario was used with all seven groups. In discussion with the MOH, JICA and others, four questions (with alternative answers) were selected regarding MCH Handbook-related activities from mothers' viewpoints. They are shown in Table 3.

Table 3 Simulation "B" Cards: Mothers' first pregnancy visits and mothers' opinions of MCH Handbook and willingness to pay for it (and health workers' and officials' opinions as to what the mothers' views would be)*

Questions ("Attributes"), for each of which one "Answer" is included on each card**	Answers ("Levels"), one of which appears on each card for each question***
1-Where do you visit at first when you get pregnant?	1-1 Health center
	1-2 Hospital
	1-3 Midwife Clinic (Private)
	1-4 Public Midwife Station
	1-5 Traditional Birth Attendant
2- Are you willing to pay for the MCH Handbook? (How much?)	2-1 Free of charge to all mothers
	2-2 Rp.2,500****
	2-3 Full cost*****
3- Do you feel you get a lot of knowledge through the MCH Handbook?	3-1 Yes
	3-2 No
4-Do you want to be given training to better understand the MCH Handbook's contents?	4-1 Want training
	4-2 Do not want training

Note*: Instruction to participants for use of the cards: "(If you were a mother of an average family in your area,)* How do (would) you feel about the services related to the MCH Handbook? Please rank these 27 cards according to your preferences among the health service combinations on the cards."

Note**: The parenthetical part of the instruction is used for all participants EXCEPT the mothers.

Note***: Each card contains one pre-selected answer per question. The combination of answers on each card was selected statistically by SPSS to produce an orthogonal design suitable for Conjoint Analysis.

Note****: Rp (Indonesian currency Rupia) 2,500 was equivalent to 0.25 US dollar in February 2003.

Note*****: Full cost of the MCH Handbook depended on the districts/municipalities, and each group of respondents was informed before sorting the cards of the specific cost of the Handbook in their district or municipality. The average full cost was Rp.4000 (0.40 US$).

2. LANGUAGES

All materials and instructions were produced, distributed and used in Indonesia's national language, Bahasa Indonesia. All health staff and MCH volunteers, and almost all mothers, could read Bahasa Indonesia.

However, six mothers could read little or no Bahasa Indonesia and therefore needed help in understanding what was written on the cards; that help was provided by local health center staff members, one of whom sat beside each such mother to translate Bahasa Indonesia, item by item, into a local language that both the mother and the staff member spoke and understood well.

3. POSSIBLE ANSWERS TO THE QUESTIONS

Issues considered in defining the proposed answers for each question included

identification of the appropriate ranges for alternative answers, intervals to be used in quantitative answers, and specification of qualitative answers.

Obviously the alternative answers to each question needed to be realistic, both alone and in combination with answers to the other questions. The questions and the alternative answers also needed to be conceived and structured in such a way that individuals would be willing to consider tradeoffs among them (Okamoto, 1999).

4. PRESENTATION OF SCENARIOS

The questions ("attributes" in the CA literature) and answers ("levels" in the CA literature) presented in Tables 2 and 3 give rise respectively to 1200 (5x5x4x3x2x2) and 60 (5x3x2x2) possible non-identical scenarios. The SPSS procedure Orthoplan (SPSS ver.10J) was used to reduce these to "manageable numbers" while still being able to infer preferred answers ("utilities") for all possible scenarios (Sanagi, 2001). The procedure results in an orthogonal main effects design[3] and gave rise to 27 scenarios each from the original 1200 and 60 respectively. Each participant divided those 27 cards into 3 groups: "preferable", "not preferable", and "neither". Each participant then ranked the cards within each of her or his groups of cards according to her or his preferences, and the three ranked groups were combined to see that participant's overall ranking order for all 27 cards.

VI. RESULTS

1. OVERVIEW

Of the 254 individual participants, 143 sorted the simulation "A" cards (i.e., all but the MCH volunteers and the mothers), and 252 sorted the simulation "B" cards. (Two provincial health officers sorted only the simulation "A" cards.)

Average Importance indicates the influence of each question in terms of the participants' rankings of the 27 cards in each simulation. Relative Importance and utility scores for each of the various questions in Simulations A and B are summarized in Tables 4 and 5, respectively. The two tables show findings for all groups of participants, although all other figures later in this paper omit the data for the Central MOH group because it included only three respondents and their responses differed too much to consider them as a group.

For Simulation "A" cards, all groups gave the most importance to "Keyman" (Provinces: 24.58%, Districts: 24.13%, health center directors: 25.22%, and health center midwives: 26.0%) except the central MOH group (23.88%), which gave slightly more importance to "Budget source" (24.93%). The second most important was "Utilization of user fee" in both Provinces and Districts (21.94% and 20.75%, respectively), however, both Directors and Midwives at health centers considered "Budget source" to be the

Table 4. Conjoint Analysis Outputs of Card A:
Continuation and Funding of the MCH Handbook

Question 1	Key person to sustain MCH Handbook Program ?				
Average Importance	23.88	24.58	24.13	25.22	26
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives
Health center	-0.6	-1.3333	0.1647	-0.5191	-0.1719
District health office	-1.5333	-0.95	0.1647	-0.1362	-0.3031
District local governor	0.7333	0.5833	0.6118	0.0426	-0.4656
Provincial health office	-1.2667	0.7667	-0.2235	0.4936	1.0687
Ministry of Health	2.667	0.933	-0.7176	0.1191	-0.1281
Question 2	Funding future MCH Handbook program ?				
Average Importance	24.93	15.94	19.76	22.85	21.41
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives
All provincial budget (PB)	-2.333	-0.3021	-0.3676	0.5638	0.4336
More PB than donors	-1.933	-0.0104	0.2912	0.2617	-0.5477
Less PB than donors	2.2	-0.2771	1.0324	-0.8362	0.1336
All donors	2.0667	0.5896	-0.9559	0.0106	-0.0195
Question 3	User fee amount expect to collect ?				
Average Importance	11.13	21.55	16.79	15.12	16.78
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives
No charge	0.9333	0.4806	0.8431	-0.3284	0.5328
Pay 2,500 Rp.	-1.1	0.2556	-1.3039	-0.0475	-0.3297
Pay full cost	0.1667	-0.7361	0.4608	0.3759	-0.2031
Question 4	Best use of collected money ?				
Average Importance	18.97	21.94	20.75	21.43	20.87
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives
Print by District Office	1.75	0.5104	0.0368	0.0346	0.9277
Print by District health office	-0.3833	-0.5146	0.5485	-0.1335	-0.9551
Use money for HC's running cost	-1.1167	0.4854	-0.2279	0.6239	-0.102
Use money for the poor at HC	-0.25	-0.4813	-0.3574	-0.525	0.1293
Question 5	Improves mothers' knowledge & behavior with MCH Handbook?				
Average Importance	14.27	8.44	11.52	7.86	7.44
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives
Yes	0.4444	0.3194	1.1127	-0.0691	-0.0156
No	-0.4444	-0.3194	-1.1127	0.0691	0.0156
Question 6	Training needed by staff/MCH volunteers for MCH Handbook ?				
Average Importance	6.81	7.54	7.04	7.52	7.5
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives
Need	0.6667	-0.1042	0.0196	-0.1294	-0.0885
No need	-0.6667	0.1042	-0.0196	0.1294	0.0885

Table 5 Conjoint Analysis Outputs of Card B:
Mothers' Views of MCH Handbook and Willingness to Pay*

Question 1	First visit in pregnancy where ?						
Average Importance	44.16	49.57	47.73	45.9	46.45	49.94	48.49
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives	MCH Volunteers	Mothers
Health center	3.7333	0.2909	1.6111	0.4783	0.1672	0.7176	1.3679
Hospital	-2.8	0.0364	0.1222	-0.2	-0.1821	-0.702	-0.9536
Private Midwife clinic	-1.2	0.0545	0.6889	-0.1522	0.2925	-0.0314	-0.0393
Public Midwife Station	0.7333	-0.9455	-0.6444	0.7174	-0.1493	0.298	0.3679
Traditional Birth Attendant	-0.4667	0.5636	1.7778	-0.8435	-0.1284	-0.2824	-0.7429
Question 2	User fee Willingness to pay ?						
Average Importance	37.78	29.34	23.29	25.55	26.78	24.24	25.54
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives	MCH Volunteers	Mothers
No charge	0.4556	0.9242	-0.1907	-0.4978	-0.0891	-0.366	-0.5083
Pay 2,500 Rp.	1.9889	0.9242	-0.4574	0.4543	-0.0726	-0.6209	0.1363
Pay full cost	-2.4444	-1.8485	0.6481	0.0435	0.1617	0.9869	0.372
Question 3	Much knowledge through MCH Handbook ?						
Average Importance	5.52	10.64	14,65	14.02	12.23	12.34	13.16
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives	MCH Volunteers	Mothers
Yes	-0.1389	0.4697	-0.5	-0.2283	0.2711	0.2745	0.0432
No	0.1389	-0.4697	0.5	0.2283	-0.2711	-0.2745	-0.0432
Question 4	Want Training ?						
Average Importance	12.53	10.45	14.32	14.53	14.55	13.48	12.81
Group of Participants	MOH	Three Provinces	Six Districts	Health Center Directors	Health Center Midwives	MCH Volunteers	Mothers
Want	0.7222	-0.2273	-0.2037	-0.4601	-0.3085	-0.2843	0.1354
Not want	-0.7222						-0.1354

*Note: For groups other than the mothers themselves, the groups' answers represent their perceptions as to the mothers' views regarding each question.

second most important (21.43% and 20.87% respectively).

In Simulation "B", regarding mothers' views and health staff perceptions of those views, for all seven groups the same question, "First visit in Pregnancy", was the most important one in ranking the cards, with very high relative importance (range:44.16% - 49.94%). The second most important question was also the same for all groups, "User Fee Willingness To Pay" (range 23.29% - 37.78%)..

Both "A" and "B" cards include questions asking about "User Fee" (question 3 in "A" and question 2 in "B "), "Improvement" (question 5 in "A" and question 3 in "B"), and "Training" (question 6 in "A" and question 4 in "B"). However, of those questions only "User Fee" showed relatively high importance (11.13% - 37.78%). The others generally were not very important for the participants' rankings of the two sets of 27 cards; with low ranges of average importance for the various groups both for "Improvement" (5.52% - 14.65%) and for "Training"(6.81% - 14.53%).

2. RESULTS: SIMULATION "A" CARDS

Simulation "A" cards are the scenarios of public health staff views of the relative importance of several factors related to the MCH Handbook's sustainability. Figures 1-1 to 1-6 show the relative preferred answers, by group, for each question. The central MOH group is excluded from the figures because only three MOH officials ranked the cards and there was little consistency among the three. These figures show both positive (above zero) and negative (below zero) preferences, which indicate what answers the participants selected/rejected as they ranked the 27 cards. The longer bars show stronger positive/negative preference in selecting answers than the shorter bars; for example, the leftmost bar in Figure 1-1 indicates that the group of three provinces considered Health Centers to be the least preferable 'Key person' to sustain the MCH Handbook (score: -1.33), and "District Health Office to be the second least preferable (score: -0.95). On the other hand, they considered the MOH to be the most preferable "Key person" (score: +0.933) and "Province" the second most preferable (score: +0.766).

Each of the figures shows findings for one question; answer preferences are indicated by the blocks within a vertical bar for each group. In response to Question 1, i.e., "Key person to take role for sustainability of MCH Handbook", each level feels itself to be the "key person" for sustaining the MCH Handbook, except directors and midwives of health centers (Figure 1-1). As for Question 2 ("expectation of funding resources"), higher levels prefer to depend on donor support for the MCH Handbook program, whereas both types of health center staff responding prefer to depend on provincial budgets (Figure 1-2). For Question 3 on "User fee amount", only health center directors would prefer to collect user fees covering full cost, and the others would prefer to provide the MCH Handbook free of charge (Figure 1-3). In Question

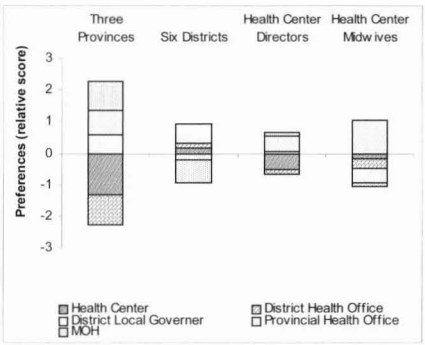


Figure 1-1: Answers to Question 1: Key Person for MCH Handbook's sustainability

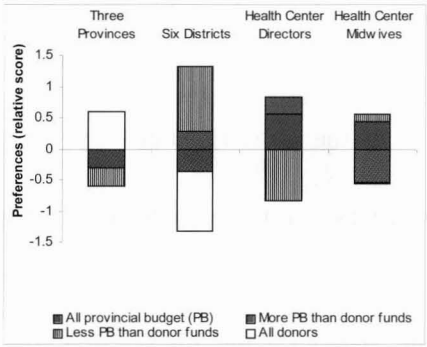


Figure 1-2: Answers to Question 2: Funding resources

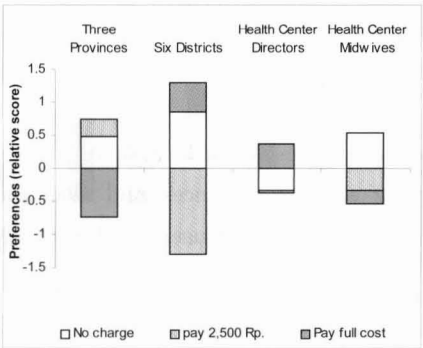


Figure 1-3: Answers to Question 3: User Fee Amount

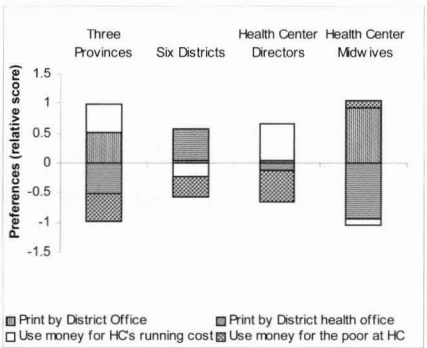


Figure 1-4: Answers to Question 4: Fee Best Use

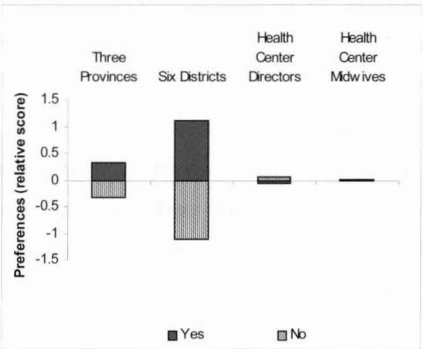


Figure 1-5: Answers to Question 5: Improves Mothers' Knowledge and Behavior

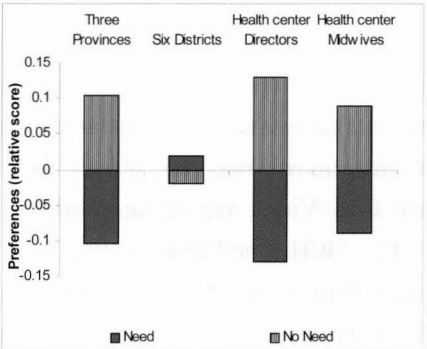


Figure 1-6: Answers to Question 6: Training Needed by Staff

Figure 1-1～1-6　Preferable Answers to Questions (1-6) in Simulation A Cards

4, "Fee best use", health center directors would prefer to utilize the user fee for general budget at their working place, the health center; however, the others would prefer to use the money collected as fees to pay to reprint the MCH Handbooks (Figure 1-4). For question 5 ("Improves mothers' knowledge and behavior"), staff at higher levels of the Public Health system perceive more Handbook-related

improvement in mothers' knowledge and behavior than do directors and midwives at health centers (Figure 1-5). For Question 6, "Training Needed by Staff", in general, public health staff perceive little need for further staff training to sustain and expand the use of the MCH Handbook (Figure 1-6).

3. RESULTS: SIMULATION "B" CARDS

Simulation "B" cards are the scenarios of MCH Handbook-related activities from the users' or mothers' viewpoint. Figure 2-1 shows that both mothers and MCH volunteers answer "Health Center" for the first contact in pregnancy. However both directors and midwives at health centers, at the frontline, believe respectively that mothers prefer private urban midwife clinics and public rural "Polindes" midwife posts for first visits in pregnancy. It is possible that mothers and MCH volunteers participating in the study were not representative of all eligible mothers since they were supposed to be gathered from near the health centers.

Figure 2-2 indicates that the mothers are ready to pay full cost of the MCH Handbook (an average of Rp. 4,000 but varying among provinces and even among districts), or at least Rp.2,500. The amount of Rp. 2,500 as a user fee for the MCH Handbook was also found to be acceptable to mothers in a previous survey, and discussions with staff during this survey indicated that it corresponds to the average fee charged in those provinces and districts that already impose such a charge. Public health staff agree that mothers are willing to pay at least Rp. 2,500, except that Province level respondents believe mothers unwilling to pay.

As for mothers' improved knowledge and behavior as a result of the MCH Handbook, mothers themselves see some handbook-related improvement, and MCH volunteers, midwives and provincial health officials believe that mothers see such improvements, whereas the others feel that mothers do not see such improvements (Figure 2-3). Views regarding mothers' desire for training in order to know more about the MCH Handbook's contents are shown in Figure 2-4, which indicates that although mothers want to learn more about the MCH Handbook's contents (through small seminars organized by MCH volunteers and/or health center staff), none of the other groups are aware of the mothers' desire for such training; both the mothers and the health staff were aware that training sessions had been organized under the program, taught by health staff and MCH volunteers, to help mothers understand the advantages of using the MCH Handbook to improve their health practices.

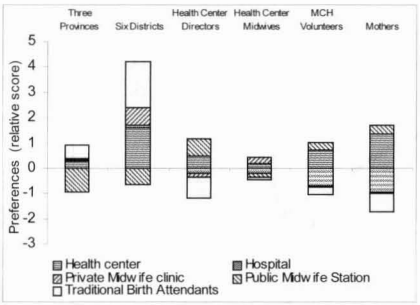


Figure 2-1: Answers to Question 1: First Visit in Pregnancy

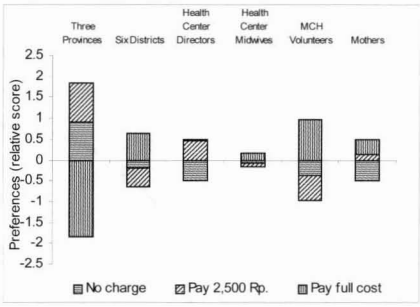


Figure 2-2: Answers to Question 2: User Fee Willingness to Pay

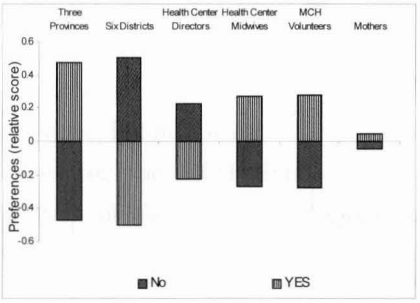


Figure 3-1: Answers to Question 3: Much Knowledge through MCH Handbook

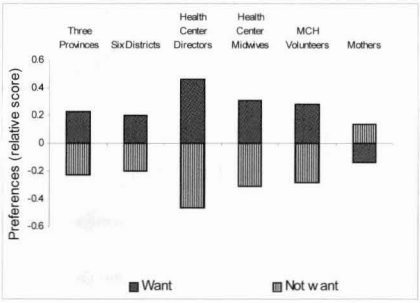


Figure 2-4: Answers to Question 4: Mothers Want Training

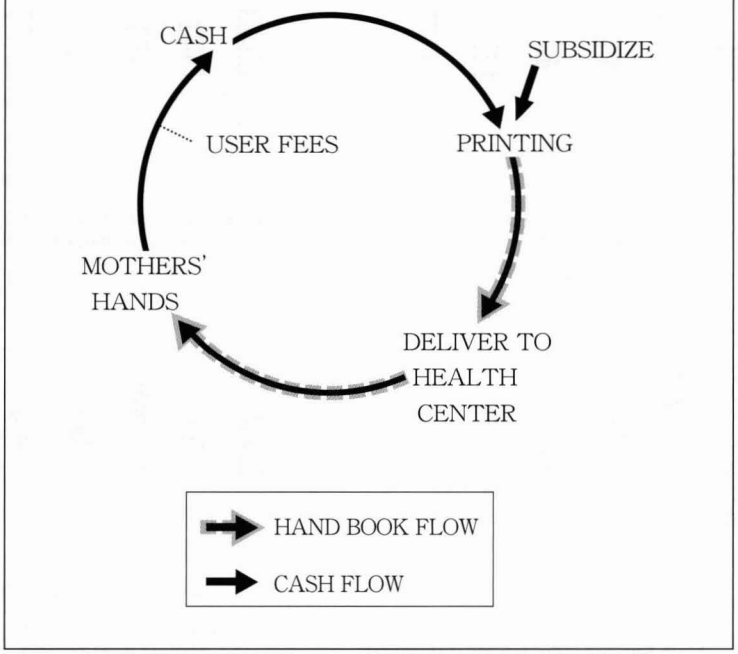
Figure 2-1～2-4　Preferable Answers to Questions (1-4) in Simulation B Cards

Ⅶ. DISCUSSION

In general, in order to sustainably provide services or goods using funds from an autonomous revolving fund, it has been recommended (Cross 1983) that the system collect, circulate and use money efficiently and track it through the use of a transparent accounting system . In the case at hand, in order to minimize losses it would also be necessary to track the movements and losses of MCH Handbooks, as well as user fee monies, throughout the cycle. Figure 3 depicts such a system, which could help free the provision of the MCH Handbook from dependence on donor funds.

On the other hand, an impression of the present condition of the MCH Handbook provision is that the revolving cycle mainly depends on donor inputs (especially from JICA), and that there are several points within the cycle with high potential for handbooks or funds to be lost, stolen, and missing; for example some MCH Handbooks may be left unused at provincial offices and at health centers, some mothers do not utilize the handbooks, and some of the collected fee monies are used for other purposes either at health centers or district levels. Due to those "external" losses, the cycle grows weaker and the losses lead to or increase the need to supply

Figure 3: Ideal cycle for autonomous sustainability with User fee and the Revolving Fund of MCH Handbook



additional funds in order to sustain the system and provide the MCH Handbook.

The main recommendations that can be offered in the context of Indonesia's public health system on the basis of the findings of the Conjoint Analysis and related observations and discussions can be summarized as follows:

1) All levels should consider how to respond to the Mothers' felt need for education and training regarding the information in the MCH Handbook, as an opportunity to improve service quality and mothers' knowledge, attitudes and practices in and through the program. Potential providers of MCH Handbook training for mothers might benefit from receiving training and training materials themselves on how to build upon the mothers' desire to learn and on how to effectively help mothers to understand and apply key MCH Handbook contents and messages.
2) To reach more mothers, the MCH Handbook could be distributed not only to and through health centers, but also through public and private midwives.
3) The MCH Handbook program began under a centralized system, which has now been decentralized under a national government decentralization program which began officially in 2001; both MOH and general governmental decentralization have major implications for MCH Handbook continuation. At the periphery of the system, there have been major changes in funding channels, increased freedom from

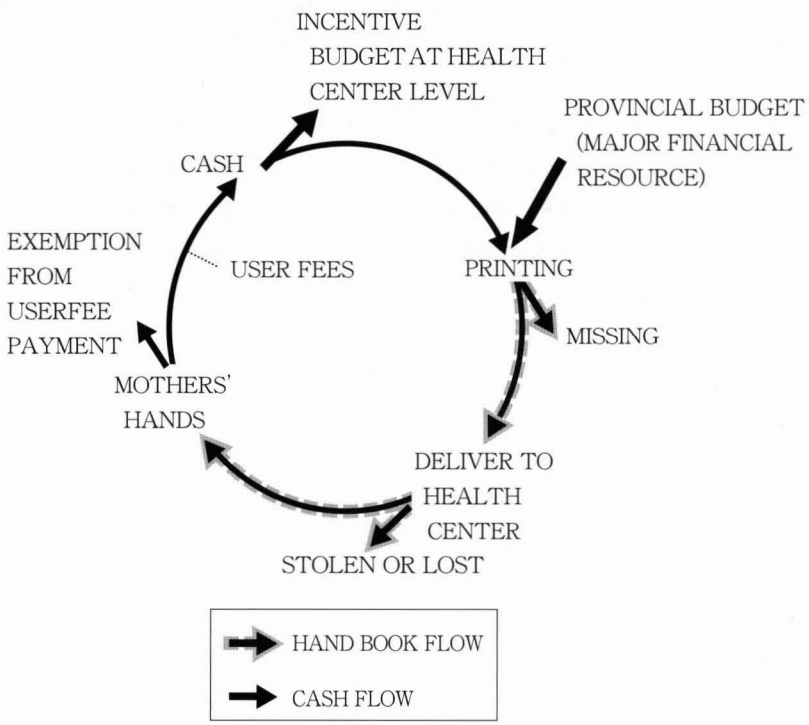
central control in the use of funds and other resources, and an increasing need for health officials to consider the interests and objectives of non-health officials at their own and immediately higher levels upon whose decisions and actions they now depend for support. For example, health center funds now come from or are channeled through the provincial level. Health center directors' views regarding the MCH Handbook program and its continuation and funding differ from the others' views. Under the increasingly decentralized system, all need to recognize the health center directors' (the de facto decision makers') willingness and intention to treat the User's fee as general budget resources for the health center, not for printing Handbooks. Also, health center directors tend to have more clinical interests than management interests, while decentralization requires that certain currently weak management systems, functions and skills be developed and effective at peripheral levels, including for example accounting.

4) High level Public Health officials need to seek alternative (non-JICA) financial resources for the MCH Handbook. Increased government, public and health staff recognition of the MCH Handbook's benefits are likely to be important in successfully obtaining those resources.

Figure 4 shows flows within what could be a sustainable system to continue and pay for the MCH Handbooks with greatly reduced or no donor support.

Under the present conditions of unsystematic user fee collection, and given the health center directors' willingness or intention to utilize the user fee as general budget, user fees might not be able to provide the main financial resources for the MCH Handbook's continuation. As health center level responses indicate, the "provincial governor's budget" might have the greatest potential as a source of funds to sustain the provision of MCH Handbooks after JICA withdraws as the main donor. In order for those funds to be made available, it would be crucial to obtain political support from the governor's office. The MCH Handbook would also need to be well-recognized both by users and by health care managers and providers as making significant contributions to improving the health of mothers and children. It might be possible to reduce the MCH Handbook's overall design and printing costs, thereby reducing the potential financial burden on each provincial governor; for example, the MOH might to a greater extent standardize the contents and inner parts of the Handbook so as to facilitate either central printing or cheaper setup for printing at any other level, and encourage and assist each province to simplify its handbook's cover page and introductory pages, for example not using color photos but rather only limited-color line drawings, as has been done with the Japanese MCH Handbooks for the last 50 years.

Figure 4: Feasible cycle to sustain MCH Handbook program with combination of user fee, local budget and great reduction of donor funds



Note*: Utilization of the User Fee to provide incentives at the Health Center level is likely to be demanded by Health Center Directors, judging from their responses in the simulation. This appears to be mainly because of the limited budgets at Health Centers following health sector decentralization in 2001.

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Notes:

(1) In a typical CA study individuals are presented with hypothetical scenarios involving different levels of attributes which have been identified as important in the provision of a good or service and asked to rank the services, rate them. Within market research ranking and rating exercises have proved the most popular. Transport economists developed the pairwise comparison approach from the economic theory of random utility (McFadden, 1973).

(2) Definition of orthogonal is as follows: Let "i" and "j" be two levels of attribute A, and "k" a level of attribute B; then:

# of products having A i paired with Bk / # of products with A i

=

# of products having A j paired with Bk / # of products with A j.

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