



## Original Research



# Dimensions Supporting and Inhibiting Pregnant Women in Using “Sayang Bunda” Application

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### Abstract

The Maternal and Neonatal Health Surveillance Officer and the Public Health Center of Purwoyoso build the android application. This application aims to help pregnant women recognize their pregnancy health thereby can improve the pregnant women's four-visit antenatal care coverage. This case study described the dimensions supporting and inhibiting pregnant women in the Puskesmas Purwoyoso work area conducted on August-November 2019. The informants of the research consisted of 42 pregnant women. Data collection was conducted using interviews and observation techniques. The instrument used was an interview guide, recorder, and observation sheet. The result of the research showed the factors supporting healthcare service in Semarang area, Semarang Health Office always monitoring the condition of pregnant women through the result of examination on pregnant women facilitation in the application, updating pregnancy article, making innovation of application to facilitate pregnant women in accessing and using the application. Puskesmas Purwoyoso promotes the application when pregnant women have their pregnancy examined in Puskesmas and the implementation of pregnant women class. The Maternal and Neonatal Health Surveillance Officer promotes the application when visiting the pregnant women's house for facilitating the pregnant women. This application has an advantage over other pregnancy application so that pregnant women Puskesmas Purwoyoso work area can get many benefits. Inhibiting factor includes the highland condition of residence, pregnant women having no android smartphone and memory data of smartphone android of pregnant women has been full.

## INTRODUCTION

Information and communication technology (ICT) can be enjoyed by everyone. The development of ICT contributes to the community, including the health sector, either positively or negatively. The positive contributions of

ICT to the health sector are: accelerating the public service, facilitating the data's accessibility, facilitating communication between health workers, facilitating data checking, and saving place. The negative contributions (weaknesses) of it are: resulting in health disorders such as eye disorder, depending on the electric power

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supply, health workers depending on the application used, its use needs special practice.<sup>1</sup> A variety of healthcare applications have been developed by the Republic of Indonesia's Ministry of Health, SehatPedia, *Indonesia Health Facility Finder* (IHeFF), e-sign, e-postorder Alkes PKRT,<sup>2</sup> Program Indonesia Sehat with a family approach.<sup>3</sup> Visit Schedule and information about women pregnancy health is contained in the design of an android-based pregnancy visit application.<sup>4</sup> The Cloud Computing-based pregnant women application gives some benefits: consultation with obstetrician and sharing experience between pregnant women.<sup>5</sup> The use of an android-based pregnant women application increases the proportion of antenatal care with good quality.<sup>6</sup>

"SAYANG BUNDA" application is the android-based pregnancy application launched by Semarang Health Office on July 2019 aiming to help pregnant women find out their pregnancy health, so that it is expected to improve the four-visit antenatal coverage of pregnant women. Content or menu contained in "SAYANG BUNDA" android-based application is the facilitation of pregnant women's health, online consultation with GASURKES KIA officers, pregnancy article, date of delivery estimation, proximate healthcare center, and general information. "SAYANG BUNDA" android-based mobile application is a new product in Puskesmas Semarang's Work Area because it is marketed simultaneously to pregnant women on July 2019.<sup>7</sup>

Semarang Health Office's data shows that the four-visit antenatal care coverage in Semarang is 97.57% (28,060 visits) and lower than the target specified.<sup>8</sup> This data also shows that the four-visit antenatal care coverage of Puskesmas Purwokoyo is 73.1% and does not meet the target of the program; it is the one with the lowest four-visit antenatal care coverage in Semarang.<sup>9</sup> The four-visit antenatal care coverage is used to find out the coverage of antenatal care comprehensively (meeting the

standard service and using the time specified) as the representation of pregnancy women protection level and the sustainability of Maternal and Neonatal Health Program. Inadequate antenatal care visit of pregnant women can be hazardous to mother and fetus she has.<sup>10,11</sup> Pregnant women with less than four-pregnancy visits has maternal death risk of 4.57 times higher than those with 4-visit ANC or more regularly.<sup>12</sup>

In the implementation of Semarang's Local Regulation Number 2 of 2015 about Maternal and Neonatal Safety, the "SAYANG BUNDA" android-based mobile application is expected to help pregnant women maximally in Puskesmas Purwokoyo's work area, Semarang, in monitoring their pregnancy so that their 4-visit antenatal care coverage can improve.

Considering the result of a preliminary study on Gasurkes KIA in Puskesmas Purwokoyo, it can be seen that the acceptability and use of the "SAYANG BUNDA" application are still low in Puskesmas Purwokoyo, only 12 out of all pregnant women targeted to use the "SAYANG BUNDA" application. This research employed Rogers' Diffusion Innovation theory and Anderson's satisfaction theory. In using "SAYANG BUNDA" android-based application in pregnant women, there are supporting and inhibiting dimensions that should be recognized.

## METHODS

The research method employed in this study was qualitative analysis one with a case study research type to obtain an in-depth description of dimensions supporting and inhibiting pregnant women in the application use. This research was conducted from August to November 2019.

This research was conducted in Puskesmas Purwokoyo's work area because the 4-visit antenatal care (ANC) coverage in this work

does not achieve the target and is the lowest coverage throughout Semarang. Informants of the research consisted of 42 pregnant women. Data collection was carried out using interviews and observation techniques. The instruments used were interview guide, recorder, and observation sheet. The variables were supporting and inhibiting factors of pregnant women in Puskesmas Purwoyoso's work area.

The method of analyzing data used was descriptive analysis one. To validate the data of research, source and triangulation techniques were used. Source triangulation was obtained from the Public Health Division of Health Office responsible for the "SAYANG BUNDA" application and GASURKES KIA as the facilitator of pregnant women. Technique triangulation was conducted by observing the result of the interview with respondents.

## RESULTS

"SAYANG BUNDA" application has been created Semarang Health Office aiming to help pregnant women recognize their pregnancy health, thereby expectedly improving their 4-visit antenatal care (ANC) coverage and it has been trialed in three Puskesmas (Public Health Centers) on June 2019: Puskesmas Gayamsari, Tlogosari Wetan, and Puskesmas Kedungmundu. The result shows that some constraints were still found in its operation: pregnant women still found difficulty in logging into the application, some Gasurkes KIA have not used the application yet, and many pregnant women still decline to use the "SAYANG BUNDA" application. This "SAYANG BUNDA" android application can be obtained by downloading it for free through Play Store on an android smartphone.

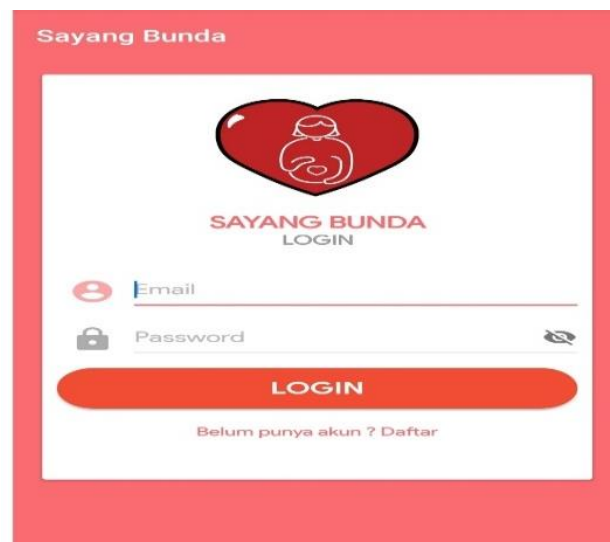


Figure 1. Login "SAYANG BUNDA" application

Menu of "SAYANG BUNDA"-android application includes pregnant women facilitation, birth consultation, proximate healthcare center, pregnancy article, date of delivery calculator, and general information.



Figure 2. Menu of "SAYANG BUNDA" application

## Characteristics of Informants

The result of research on the characteristic of informants is presented in table 1. That showed that nearly all of the pregnant women (92.86%) are 20-35 years old. Most (54.76%) of pregnant women are housewives. Almost all pregnant women (80.95%) have secondary education level. Most of them (76.19%) have medium income. All (100%) of pregnant women are Muslims. All (100%) of them live in a plain

area. Less than half (35.73%) of them are in the second-trimester gestation. Most (71.43%) of them are multigravida. Most

(73.81%) of them have *Plain Joe's* lifestyle. Almost all (92.86%) of them show rational consumer behavior.

Table 1. Characteristics of Pregnant Women in Puskesmas Purwoyoso's Work Area, Semarang (N=42)

Characteristics	Category	Total	
		f	%
Age	<20 years	0	0
	20-35 years	39	92.86
	> 35 years	3	7.14
Occupation	Merchant	0	0
	Labor/farmer	0	0
	Civil Servant	0	0
	TNI/POLRI (Army/Police)	0	0
	Retired	0	0
	Entrepreneur	2	4.76
	Private	17	40.48
Education	Housewife	23	54.76
	Primary/Low	3	7.14
	Secondary	34	80.95
Income	High	5	11.91
	Low	0	0
	Medium	32	76.19
	High	6	14.29
Religion	Very High	4	9.52
	Islam	42	100
	Christian	0	0
	Catholic	0	0
	Hindu	0	0
	Buddha	0	0
Residence Area	Konghucu	0	0
	Belief in God	0	0
	Coastal Village/Kelurahan	0	0
	Non-coastal Village/Kelurahan	0	0
	Slope/Peak Village/Kelurahan	0	0
Pregnancy	Valley Village/Kelurahan	0	0
	Plain Village/Kelurahan	42	100
	Trimester I	14	33.33
	Trimester II	15	35.72
Pregnant Status	Trimester III	13	30.95
	Primigravida	12	28.57
Lifestyle	Multigravida	30	71.43
	Kelompok <i>Swingers</i>	2	4.76
	Kelompok <i>Seekers</i>	9	21.43
Consumer Behavior	Kelompok <i>Plain Joes</i>	31	73.81
	Rational consumer behavior	39	92.86
	Irrational consumer behavior	3	7.14

## Supporting Dimension

The result of the interview with informants shows that the "SAYANG BUNDA" application is marketed simultaneously to pregnant women in all work areas of Puskesmas throughout Semarang in July 2019. Pregnant women can access this

application by means of downloading it for free in play store on the android smartphone; this application has content/menu different from other pregnancy applications do. The difference lies on a menu of pregnant women facilitation displaying the women's result of pregnancy examination in GASURKES KIA



visit including weight, blood pressure, forearm circle, fundus uterine height, complaint, pregnancy risk, and etc. The online consultation menu contains the phone number of GASURKES KIA (health worker) facilitating the pregnant women. The healthcare facility menu contains all healthcare services available in each sub-district existing in Semarang. The date of the Delivery calculator menu enables us to get an estimation of the due date by entering the first day of the last menstruation and monthly menstruation cycle into it. The pregnancy article menu contains many articles on pregnancy and neonatal health. The general information menu contains any general information on health in Semarang. The content/menu of the "SAYANG BUNDA" application will be filled in by GASURKES KIA based on the women's result of pregnancy examination during home visit. The menu of pregnancy articles is always updated by the Public Health Division of Semarang Health Office.

Puskesmas Purwoyoso and GASURKES KIA promote the "SAYANG BUNDA" application since its launching. Promotion is conducted at any time when the officer sees pregnant women, both during the examination in the puskesmas or in the implementation of pregnant women class and during the home visit for facilitating pregnant women. "SAYANG BUNDA" application connects pregnant women online to the Public Health Division of Semarang Health Office so that their health condition can be monitored by the Public Health Division of Semarang Health Office.

Generally, "SAYANG BUNDA" application has some advantages over other pregnancy applications: pregnant women can know their pregnancy health condition and can tell it to others by opening "SAYANG BUNDA" application on their own smartphone, pregnant women can acquire knowledge on pregnancy and fetal health, baby, postpartum, and health advise to maximize maternal and fetal health, pregnant women can access easily the

result of pregnancy examination facilitation conducted in this application, pregnant women know their pregnancy condition routinely and periodically, it establishes closer relationship between pregnant women and Gasurkes KIA officers, pregnant women should not pay to get this application as it is given for free by downloading it, pregnant women can consult online with Gasurkes KIA officer, this application is simple, complete, and usable and operable, and this application is portable as it is inherent to pregnant women's smartphone.

### **Inhibiting Dimension**

"SAYANG BUNDA" application is still new as it has just been launched in July 2019 by Semarang Health Office; thus many pregnant women have not known the application yet.

The result of current research shows that not all pregnant women existing in Puskesmas Purwoyoso have android Smartphones. Some pregnant women or their families have no android smartphone. Some others have it but it is brought by their husband or child, while the pregnant women do not have it. It inhibits the use and the access to "SAYANG BUNDA" application.

Pregnant women's residence location is high land so that the android smartphone signal is poor. Only some pregnant women's houses subscribe to *wifi*. It makes pregnant women accessing the "SAYANG BUNDA" application difficultly.

Android smartphone has some limitation in the term of application that can be downloaded. Pregnant women in Puskesmas Purwoyoso's work area have their own need in accessing the application in their android smartphone so that android smartphone often encounters application overload. It inhibits access to other applications, including the "SAYANG BUNDA" application.

Some pregnancy applications have been available on the internet and can be accessed in pregnant women's android smartphone easily and for free. Pregnant women consider them more important than the "SAYANG BUNDA" application so that they decline to use the "SAYANG BUNDA" application during their pregnancy.

## DISCUSSION

The satisfaction with healthcare service access can be achieved when the healthcare service can be distributed well based on geographic location, social-economic condition, and people's demand.<sup>13</sup>

A developing country has varying demographic characteristics including plain, hill, swamp, jungle, and coast.<sup>14</sup>

Pregnant women with higher education levels are aware of their and their family's health.<sup>15</sup> Those with lower education levels have limited language use. The health workers can explain with the reverse sheet containing supporting images or other visual aids.<sup>16</sup>

The working women have no time to have their pregnancy examined. Housewives also consider their chores like washing and taking care of children as the constraint in accessing ANC service.<sup>17</sup>

The accessibility of information on pregnancy in various media can be obtained by pregnant women with high economic status.<sup>16</sup>

More knowledge, comprehension, and experience related to pregnancy and its complications are acquired in older pregnant women so that the frequency of ANC visits in this age group is higher than that in younger pregnant women.<sup>18</sup> Primigravida women have not had experience with pregnancy risk and complication. Therefore, pregnant women utilize ANC visits to acquire information.<sup>19</sup>

## Supporting Dimension

Pregnancy application evidently improves pregnant women's knowledge, attitude, and behavior effectively related to the prevention of pregnancy and birth complications.<sup>20</sup> Health education or pregnancy article and technical service on smartphone applications for pregnant women trigger the change of behavior and improve the quality of antenatal care (ANC).<sup>21</sup>

Health worker's support affects pregnant women's knowledge, attitude, and behavior to pregnancy application and ANC visit.<sup>22</sup> Health workers affect positively the successful promotion of healthcare service to the community.<sup>23</sup>

## Inhibiting Dimension

Technology advance is something inevitable today; therefore it can be utilized to create innovation, one of which is by utilizing the android operating system-based cellular phone.<sup>24</sup> Data Indonesian Internet Service Provider Association (*Data Asosiasi Penyelenggara Jasa Internet Indonesia* or APJII)'s data shows that nearly half (48.57%) of internet penetration occurs in female users in Indonesia. The penetration of internet users by ware ownership indicates that half (50.08%) of internet users use smartphones/tablets. The utilization rate of the internet for the health sector includes 51.06% for searching for information on health and 14.05% for consulting with health professionals. The service accessed mostly (89.35%) is chatting one.<sup>25</sup> In her study entitled *Health Care and Social Media: Building Relationships Via Social Network*, Brittany A. Hackworth from Morehead State University, found that healthcare service providers in the United States of America use internet in marketing their healthcare service to communicate actively with their patients, by developing (*PatientsLikeMe* and

*Inspire*) application and utilizing social media (Facebook, Twitter, Facebook).<sup>26</sup>

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## CONCLUSION

The advantages of the "SAYANG BUNDA" application and the support coming from GASURKES KIA, Puskesmas Purwoyoso, and Semarang Health Office can be used as an alternative to support the pregnant women to access and to use "SAYANG BUNDA" application.

The presence of supporting dimensions from many parties is expected to deal with the inhibiting ones in the use of "SAYANG BUNDA" application, and thereby many more pregnant women in Puskesmas Purwoyoso's work area will access and use the application and it can improve the 4-visit antenatal care coverage in Puskesmas Purwoyoso.

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## CONFLICTS OF INTEREST

Neither of the authors has any conflicts of interest that would bias the findings presented here.

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