The Analysis of the Relationship between Breast Cancer Knowledge Levels in the General Public with Early Detections of the Disease: A Case Study of Women in Depok City

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ABSTRACT

This research analyzed the effect of breast cancer knowledge level on self-awareness, social support, public services, early detection of the disease in Depok City. This research was conducted in October-December 2023. The method used to carry out the research was quantitative method. In this research, the author performed an exploratory factor analysis test to find out the validity level of each research indicator. To test the reliability, we apply Cronbach's Alpha value. We also used the Structural Equation Modeling analysis test with the use of the AMOS application. The sample in this research consisted of 435 respondents. The results of the validity and reliability tests show that all research indicators meet the specified standards. From the results of the study, it is known that the level of breast cancer knowledge has a positive effect on self-awareness, social support, and public services as well as a positive influence on early detection of the disease in Depok City.

Keywords: Cancer Knowledge, Self-Awareness, Social Support, Public Services, Early Detection.

INTRODUCTION

Lack of knowledge about cancer is a serious challenge in communities. Factors such as limited access to health services, low education, and lack of awareness of cancer risks are the main causes of the lack knowledge. Community involvement plays an essential role in addressing cancer disparities. The affected communities need to be urged to actively involved in designing, implementing, and evaluating initiatives and interventions in that regard. Actively involving affected community will result in making the community to be the competent party in its own experiences, needs and preferences and empowering its knowledge to actively participate in the decision-making process. Community involvement ensures that interventions are culturally appropriate, responsive, and sustainable by fostering collaborative partnerships between researchers, healthcare providers, policy makers, and community members. This will help in better dissemination of information and updates (Kale et al., 2023).

Recent studies have pointed to the lack of knowledge, attitude, and practice (KAP) related to cancer among community health workers, which is an indicator of a lack of understanding of the disease in various walks of life. This also affects the provision

of information to the community to actualize awareness in the community. The knowledge provided by community service workers also results in the information received by community.

Social support is vital in improving cancer knowledge in the community. Through support from family, friends and the community, individuals tend to be more willing to seek information, discuss and learn about the causes, symptoms and treatments of cancer (Dedi et al., 2021). Researches have revealed that the higher the level of social support received by cancer survivors, the lower the level of depression experienced by the survivors. This implies that social support not only provides a sense of comfort and courage for people with cancer, but also allows them to be more focused and open to information about their illness.

Social support also assists people with cancer in understanding and accepting their circumstances. It creates a nurturing environment where people with cancer feel more at ease to seek information, talk about their experiences, and learn about ways to better cope with their illness (Maria Drosta Vianey Sendo et al., 2017).

In relation to breast cancer, social support, both from spiritual and from the social environment, is closely related to patients' quality of life. This support not only influences psychological aspects, but also enables patients to gain knowledge about cancer and ways to cope with their condition (Endiyono & Wawan Herdiana, 2016).

The research findings demonstrate that social support is vital in improving the quality of life of people with cervical cancer. It emphasizes the essential role of social support in helping individuals to understand and cope with cancer. Social support is an inevitable contributor to the urgency of providing the best education in overcoming and detecting cancer early (Mahdalena & Aiyub, 2017).

High awareness has a tremendous impact on the level of knowledge about breast cancer.

Self-awareness in breast cancer can also help people to detect the disease early. Social support is an often unforgettable thing in promoting public awareness. In addition, public services are a key milestone in its application. Thus, people will have self-awareness to detect the disease in early stage. Therefore, researchers feel it is important to discuss breast cancer knowledge in women as early detection of breast cancer in Depok City.

Literature Review
Perceived Health Knowledge
Perceived Health Knowledge is the level of the health knowledge that people have in understanding the existing health situation. As a fast growing society, we must be ready to face any disease. Knowledge of disease will help in making it easier for people to recognize the dangers and importance of taking care of themselves early (Loprinzi, 2015).

Self-Awareness
Self-awareness is the self-awareness that people have in understanding and knowing about diseases. This self-awareness is able to provide convenience to the community in knowing health information. An aware society will bring a good understanding in preventing breast cancer (Luo & Wu, 2017).

Social Support
Social support is the support enabling people to get attention from the community in order to prevent disease. In terms of understanding breast cancer, the survivors can also be accompanied by strong social support so that they can understand well about the dangers of cancer (Labrague, 2021).

Public Services
Public Services are services available in the community that is able to provide support in understanding health knowledge. Good public services will help people to be well informed about cancer and its causes. This will make it easier for people to get

information quickly (Brusa & Bahmani-OSkooee, 2022).

Early Detection

Early detection is the early detection which leads to the early prevention of the spread of a disease in the community. The community can prevent and detect breast cancer early if they have good knowledge about the disease. Providing good knowledge will make it easier for people to gain knowledge about the stage of early cancer (Crosby et al., 2022).

RESEARCH METHOD

The research method used was quantitative method. The subjects of this research were women in Depok City in the age range of 15 - 64 years. In addition, the time frame of this research is within 3 months from October to December 2023. In this study, the scope of research determined by the researcher is about the level of knowledge, self-awareness, social support, public services, and early detection. This research was conducted in Depok City, Indonesia.

The number of samples taken in this population was estimated at 435 samples. This is based on sample considerations that can have high accuracy results. Therefore, the author took 435 samples. In this study, the authors calculated EFA or Exploratory Factor Analysis to determine the validity level of each research indicator. According to Hair (2018a), the factor loading for a sample size of 400 is 0.40. So it is expected to get a better validity value.

Meanwhile, the instrument reliability test is a further process after testing the validity of the instrument. A reliable instrument is an instrument that if it is used several times to measure the same object will produce the same data. Reliability relates to the stability and consistency of the measuring instrument. According to Hair (2018a), an instrument is reliable if there is a sequence of Cronbach's Alpha values. The reliability level value is shown from zero to one, with a reliability standard that is above 0.7. In this study, researchers used Structural Equation Modeling data analysis with the AMOS application.

Figure 1. Research Model
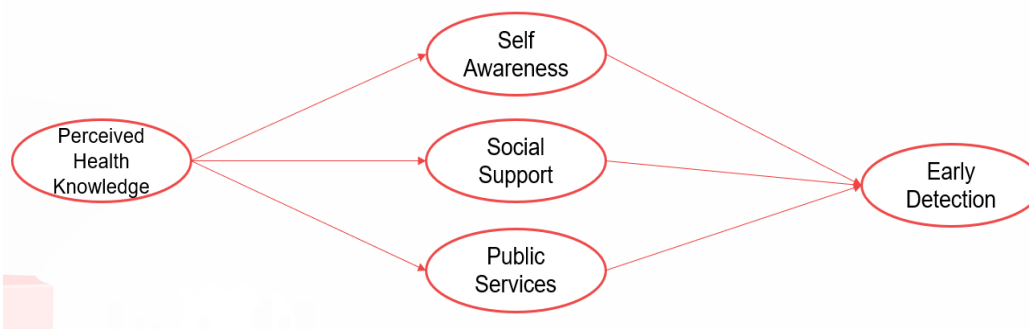
The figure above illustrates that the research model adjusted to the relationship between variables results in the formulation of a hypothesis. Therefore, there are five hypotheses that form the basis of this research. This research model produces hypotheses that will be tested further.

RESULT

Respondent Analysis

In this research, there are 469 respondents who fill out the online survey that the author has distributed to get research results. However, there were 34 respondents who did not meet the requirements in this research. Thus, respondents who could continue filling out the survey until the end and were declared valid respondents to the author's research were 435 respondents or equivalent to 92.75% of the 469 respondents. Meanwhile, 34 respondents or 7.25% of respondents were declared invalid or could not be used as a reference to continue answering research questions. This

research produced a variety of respondents, but based on the table below it can be seen that there are balanced results regarding respondent information.

Table 1. Respondent Profile

Demographics	Demographics	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Sex	Male	0	0	0	0
	Female	435	100	100,0	100,0
Age	15-25 years old	179	41,1	41,1	41,1
	25-30-years old	150	34,5	34,5	75,6
	30-35 years old	43	9,9	9,9	85,5
	35-40 years old	14	3,2	3,2	88,7
	40-55 years old	29	6,7	6,7	95,4
	55-64 years old	20	4,6	4,6	100,0
Education	< High School	16	3,7	3,7	3,7
	High School	124	28,5	28,5	32,2
	Diploma	102	23,4	23,4	55,6
	Undergraduate	184	42,3	42,3	97,9
	Master/Doctoral	9	2,1	2,1	100,00
Occupation	Working	170	39,1	39,1	39,1
	Not Working Yet	84	19,3	19,3	58,4
	Owning business	56	12,9	12,9	71,3
	Retired	13	3,0	3,0	74,3
	Not Working	112	25,7	25,7	100,0
Marital Status	Not married yet	168	38,6	38,6	38,6
	Married	7	1,6	1,6	40,2
	Widowed (lost their legally-married spouse through death)	256	58,9	58,9	99,1
	Divorced	4	0,9	0,9	100,0
	Total	435	100	100	100,0

According to the answers given by respondents in the research results, there are various answers to each question. Since the target sample is female, therefore the entire sample recorded is 100.0% female or a total of 435 respondents are female.

The level of breast cancer knowledge in the community is indicated by the presence of 92 people or 21.15% of respondents who stated that they agreed and strongly agreed with the knowledge on breast cancer. This shows that there is still a low level of public knowledge of awareness of knowledge about breast cancer.

There is something interesting about the findings related to the self-awareness. A total of 292 respondents or 67.23% of respondents agreed and strongly agreed on the awareness of taking care of themselves from all things that cause breast cancer. In addition, the facts also show that women aged 15-25 years are more aware of taking care of themselves as many as 127 respondents or 43.49% of respondents who agreed to the awareness of taking care of themselves from breast cancer.

This research found that 327 respondents or 75.17% of respondents agreed and strongly agreed that the family is the active agent to prevent breast cancer. The same thing is also seen in another answer relating to the role of surrounding environment. The total of 329 respondents or 75.63% of respondents expressed agreement in the efforts of the surrounding environment to support awareness to prevent breast cancer.

Public services also get an unignorable place. A total of 276 respondents or 63.49% of respondents agreed and strongly agreed that the available public health services have provided information about breast cancer. 345 respondents or 79.31% of respondents agreed and strongly agreed in the satisfaction of getting good health services about breast cancer.

Early detection is important in understanding breast cancer prevention. A total of 301 respondents or 69.20% of respondents stated that they agreed and strongly agreed in the knowledge of the symptoms of breast cancer. In addition, there were 291 respondents or 66.90% of respondents who understood the early

symptoms of breast cancer. 377 respondents or 86.67% agreed and strongly agreed on breast health awareness. This shows that most people are aware of breast cancer knowledge.

Validity Test

Validity test is carried out to identify research indicators that have a strong level of validity. Based on the results of the validity test with SPSS in Table 2, the validity test results are obtained according to the calculation with a factor loading of 0.40 and a sample size of 435 (Hair et al., 2018b).

Table 2. Validity Test Results

Perceived Health Knowledge	
PHK1 I am well informed about Breast Cancer	0,795
PHK2 I read various books and information about Breast Cancer	0,840
PHK3 I have a good understanding of the causes of Breast Cancer	0,844
PHK4 I understand well the impact of Breast Cancer	0,858
PHK5 I learn more about Breast Cancer	0,831
PHK6 I believe that breast cancer is a fearful	0,642
PHK7 In my humble opinion, people who get breast cancer end up dying	0,567
PHK8 I believe breast cancer is curable	0,686
Self-Awareness	
SA1 I understand that Breast Cancer can be fatal	0,764
SA2 I protect myself from everything that causes Breast Cancer	0,867
SA3 I protect myself and my family from Breast Cancer	0,879
SA4 I maintain my diet to avoid Breast Cancer	0,876
SA5 I start to exercise diligently in order to reduce the risk of Breast Cancer	0,877
SA6 I know that Breast Cancer is fatal	0,898
Social Support	
SS1 My family supports me to avoid Breast Cancer	0,783
SS2 My family provides information about Breast Cancer	0,892
SS3 My family actively reminds me of the importance of protecting myself from Breast Cancer	0,914
SS4 Living environment supports awareness to avoid Breast Cancer	0,916
SS5 The surrounding environment helps in overcoming Breast Cancer	0,922
Public Services	
PS1 The health services I visited have provided information about Breast Cancer	0,906
PS2 The health services I visit handle Breast Cancer well	0,910
PS3 The health services provide easy access to information about Breast Cancer	0,945
PS4 I find it easy to access information about Breast Cancer	0,930
PS5 I get good health services relating to Breast Cancer	0,942
Early Detection	
ED1 I know the symptoms of Breast Cancer	0,903
ED2 I can cope well with the early symptoms of Breast Cancer	0,890
ED3 I visit the Local Health Service to get more information	0,929
ED4 I follow the directions and instructions of the Health Officer in overcoming Breast Cancer	0,922
ED5 I care about my breast health	0,752

Based on the results of the table above, each indicator on the variable is valid because it has a value above factor loading, namely 0.4. This shows that the research indicators are valid.

Reliability Test

The reliability test was carried out to determine the level of reliability of 29 questions with a standard value of *Alpha Cronbach* > 0,7.

Table 3. Reliability results of 29 items

Case Processing Summary			
		N	%
Cases	Valid	435	100.0
	Excluded[a]	0	.0
	Total	435	100.0
Cronbach's Alpha	N of items		
0,970	29		

Table 3 illustrates the reliability of 435 respondents, namely 100% of respondents fully filled in the case processing summary table. In addition, the reliability statistics table shows that all 29 question items show the Cronbach Alpha number at a value of 0.970, which is above the Cronbach Alpha value limit> 0.7. So it can be stated that all question items are reliable.

Table 4. Variable Reliability

	Cronbach's Alpha	N of Items
Perceived Health Knowledge	0,893	8
Self-Awareness	0,930	6
Social Support	0,932	5
Public Service	0,959	5
Early detection	0,928	5

The reliability table for each variable shows a number above Cronbach's Alpha, which is 0.7. The entire variable shows a number value that is already reliable. So this can result in all questionnaire items being said to be reliable.

In this research, the authors analyzed the data with Structural Equation Modeling using the AMOS application. Using AMOS, the author modifies the indications on the modification indices. After reducing the indicators, the authors modeled the research model with the remaining indicators.
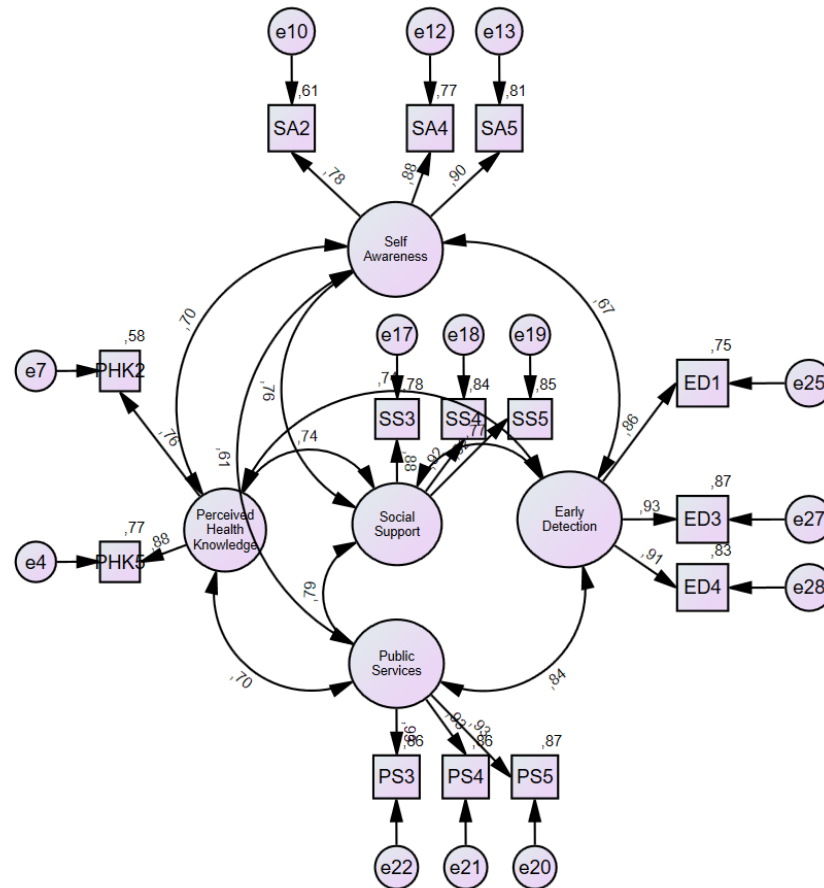
Figure 2. Initial research model before fit
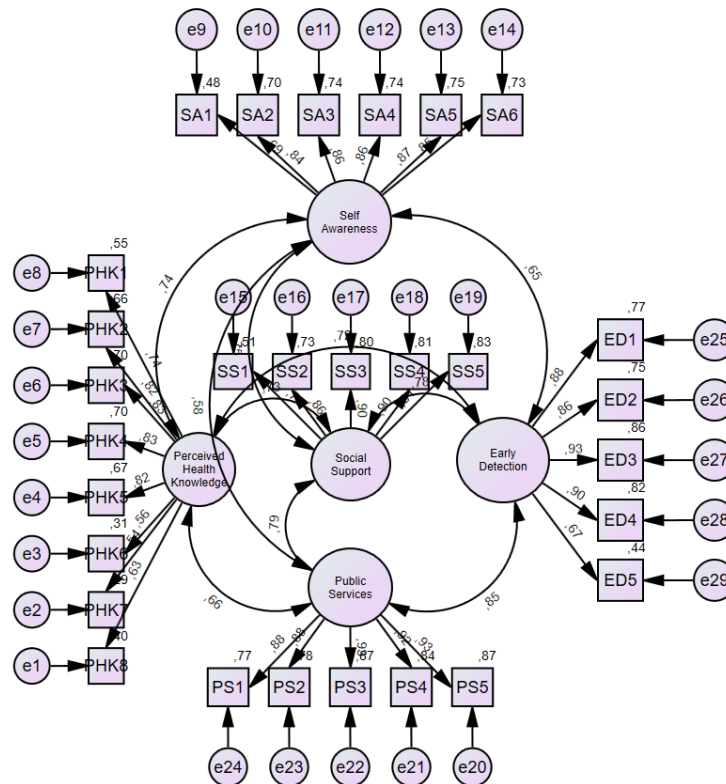
The output on the Fit model does not meet the requirements as determined through CFA, namely the P value> 0.05 and CMIN / DF ≤ 2.00 which can be seen in the following table:

Table 5. CMIN results Model before fit

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	68	1570,133	367	0	4,278
Saturated model	435	0	0		
Independence model	29	12951,583	406	0	31,900

Table 5 shows that the overall estimation value has not met the standard and the model has not been fit. So that modification indices are carried out so that they are obtained to meet the standard P value> 0.05 and CMIN / DF ≤ 2.00.

Figure 3. Final model after fit

After performing modification indices on e1, e2, e3, e5, e6, e8, e9, e11, e14, e15, e16, e23, e24, e26, e29, the output results have shown changes. The output on the Fit model has met the requirements as determined through CFA, namely the P value> 0.05 and CMIN / DF ≤ 2.00 as shown in the following table:

Table 6. CMIN Model Fit Results

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	38	77,402	67	0,181	1,155
Saturated model	105	0	0		
Independence model	14	5993,031	91	0	65,857

Table 6 shows that the overall estimation value has met the standard and the model can be said to be fit. Based on the predetermined standard values, the Goodness of Fit analysis results are as follows:

Table 7. Goodness of Fit Analysis Results

GOF measures	Limit Values	Values	Decisions
CMIN/DF	< 2,00	1,155	*Good Fit*
Goodness of Fit Index (GFI)	≥ 0.90	0,975	*Good Fit*
Root Mean Square (RMR)	≤ 0.05	0,019	*Good Fit*
Root Mean Square Error of Approximation (RMSEA)	≤ 0.05	0,019	*Close Fit*
Normed Fit Index (NFI)	≥ 0.90	0,987	*Good Fit*
Adjust Goodness of Fit Index (AGFI)	≥ 0.90	0,961	*Good Fit*
Incremental Fit Index (IFI)	≥ 0.90	0,998	*Good Fit*
Comperative Fit Index (CFI)	≥ 0.90	0,998	*Good Fit*
Tucker Lewis Index (TLI)	≥ 0.90	0,998	*Good Fit*

Since the overall fit conditions are met for each standard, the research model is declared to be a good fit for all assessment standards.

DISCUSSION
Hypothesis Test

The hypothesis has a significance value using the standard value of CR> 1.96 and a P value <0.05, while the strength of the effect can be seen in the estimation table based on Generalized Least Squares Estimates seen in the following table:

Table 8. Hypothesis Test Results

Ha	Hypothesis			Estimate	S.E.	C.R.	P	Description
H1	PHK	→	SA	0,570	0,055	10,316	***	Accepted
H2	PHK	→	SS	0,670	0,062	10,793	***	Accepted
H3	PHK	→	PS	0,701	0,066	10,679	***	Accepted
H4	SA	→	ED	0,540	0,053	10,199	***	Accepted
H5	SS	→	ED	0,696	0,062	11,222	***	Accepted
H6	PS	→	ED	0,828	0,069	12,007	***	Accepted

Based on table 8 above, it can be concluded that the first hypothesis, namely perceived health knowledge, has a positive and significant effect on self-awareness. This is in accordance with previous studies (Loprinzi, 2015; Luo & Wu, 2017; Trevethan, 2017) which state that perceived health knowledge has an impact on self-awareness. This research shows that perceived health knowledge is very important in increasing public knowledge. People can understand this as a form of good self-awareness in better knowledge of cancer.

The second hypothesis shows that perceived health knowledge has a positive and significant effect on social support. This is in line with previous studies (Labrague, 2021; Van Droogenbroeck et al., 2018; Wang et al., 2014). All of these studies provide an explanation that positive significance is seen in the effect of perceived health knowledge on social support. This also resulted in this study making perceived health knowledge an influencing factor on social support. Social support from the surrounding environment can directly influence cancer knowledge on health knowledge in the community.

The third hypothesis suggests that perceived health knowledge has a positive and significant effect on public services. This is in accordance with previous studies (Brusa & Bahmani-OSkooee, 2022; Gazzeh & Abubakar, 2018; Wulandari et al., 2023)

which show that there is a positive significance of the effect of perceived health knowledge on public services. Thus, perceived health knowledge has a positive effect on public services. This means that public services are also need to be considered in health knowledge.

The fourth hypothesis shows that self-awareness has a positive effect on early detection. This result is in accordance with research that supports previous research (Choi et al., 2017; Galea et al., 2020; Riegel et al., 2017). This research reveals positive and significant results regarding the effect of self-awareness on early detection. In the end, self-awareness has a significant effect on early detection. This indicates that people who have self-awareness have high early prevention of breast cancer.

The fifth hypothesis shows that social support has a positive effect on early detection. These results are also in accordance with research conducted by previous studies (Alnazly et al., 2021; Ginsburg et al., 2020; Pereira et al., 2020). This research shows that there is a significant effect of social support on early detection. This shows that strong support in the social world provides early prevention of breast cancer in the community.

The sixth hypothesis shows that public services have a positive effect on early detection. This research is in accordance with previous research (Coleman, 2017; Crosby et al., 2022; Kessler, 2017). This

shows that there is a positive influence of satisfying public services so that early prevention occurs in the community. This awareness of early prevention can help people be aware of breast cancer.

CONCLUSION

Based on research that has been conducted by the author, it shows that the hypothesis results are very positive. The first hypothesis, namely perceived health knowledge, has a positive and significant effect on self-awareness. This results in public knowledge resulting in self-awareness in the dangers of breast cancer. While the second hypothesis is perceived health knowledge has a positive and significant effect on social support. This shows that health knowledge helps in social support in the community for breast cancer.

The third hypothesis states that perceived health knowledge has a positive and significant effect on public services. This shows that there is a positive influence on public services helping people to have good knowledge about breast cancer. The community can feel satisfied with public services.

The fourth hypothesis is that self-awareness has a positive effect on early detection. Based on the results of the research, it shows self-awareness of the dangers of breast cancer leads to early preventions.

Based on the results of the fifth hypothesis, we can see that social support has a positive and significant effect on early detection. So it can be seen that social support plays a very influential role in early prevention of the dangers of breast cancer. While the sixth hypothesis, namely public services, has a positive and significant effect on early detection. This results in the influence of good public services in realizing early prevention of the dangers of breast cancer.

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