

The Correlation Of 1 Month Injection Hormonal Contraception With Cognitive Function Of Acceptor In Tanjung Rema Public Health Center Martapura Sub-District Banjar Regency

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ABSTRACT

Background: Among all of acceptor in Martapura sub-district, 91.8% use hormonal contraception. Injection contraception is the most acceptor choose to use, that is bout 55.8%. This contraception is including estrogen and progesterone hormone. Estrogen hormone is really important as long a woman life, beside for sexual function and reproductive, it's also important to decline the decreasing of cognitive function.

Purpose: The aim of this research is to know the correlation between 1 month injection hormonal contraception with cognitive function of acceptor in Tanjung Rema Public Health Center Martapura sub-district Banjar regency.

Method: The method used analytic with cross sectional. The subject is hormonal acceptors and collected by purposive sampling.

Result: Respondents who used 1 moth injection of hormonal contraception bout 67.6% and non 1 moth injection contraception was bout 32.4%. The total of respondents who has dementia cognitive function was 2.9%, "borderline" dementia was 14.7%, moderate cognitive function was 29.4%, and good cognitive function was 52.9%. Based on statistic test use chi-square test, that was $p = 0.008$ or less than $\alpha = 0.05$.

Conclusion: Concluded there has significant relation between 1 month injection hormonal contraception with acceptor cognitive function. Suggested that this results can be use for promotion program. Which beside as contraception it can uses as cognitive function defender.

Keywords: 1 month injection, acceptors, cognitive function, contraception

INTRODUCTION

Health development is an integral part of national development. The development is aimed to create a healthy, intelligent, productive, and highly striving human being towards the creation of a developed, independent, prosperous and spiritual nation. This is in line with the vision of the National Family Planning Program, which is outlined in 6 missions that empowers communities to build quality small families, improve the quality of family planning services and reproductive health. One effort to realize the mission is to control or regulate pregnancy by using contraception (BKKBN, 2010).

Results of Household Health Survey (HHS) in 2008 showed that the number of family planning acceptors in Indonesia reached 29 million people or about 60% of the number of fertile couples (PUS) (Departemen Kesehatan Republik Indonesia, 2008). Meanwhile, the number of family planning acceptors in Kabupaten Banjar is 14,725 people, and most acceptors (27%) are in Sub-district of Martapura that is 4,132 people. Of all acceptors in Martapura Sub-district, 91.8% of them use hormonal contraception. The most widely used hormonal contraceptives were 55.8% injections (Badan Pusat Statistik, 2008). Data at Tanjung Rema Public Health Center have 1,813 family planning acceptors and 35.5% of whom are injecting hormonal contraception users, consisting of 40% of 1 month injection of 304 people.

Contraceptive hormonal injection 1 (one) month is a combination of injections containing estrogen and progesterone hormones, both types of hormones are similar to the hormone produced by the body (Wiknjosasro, 2006). Estrogen hormones are indispensable throughout the life cycle of women, in addition to sexual and reproductive

functions are also needed to prevent cognitive function decline (Affandi, 2009).

Cognitive function is all mental activity associated with perception, mind, memory, and information processing that enables a person to gain knowledge, solve problems, and plan for the future (Samsunumiyati, 2003).

In a preliminary study conducted at Tanjung Rema Martapura Public Health Center, the hormonal contraceptive acceptor 1 (one) month was given a question that was not much different from the contents of the questionnaire which will be used at the time of the research. The question is, among other things, asking what date and day it is. The researcher also asked the purpose and objectives of the acceptors to the Tanjung Rema Community Health Center that day, and the researchers also re-enacted what type of contraception the acceptor would use and how long the effectiveness would be.

Based on preliminary study that has been done by researchers at the beginning of December of 2010. On 6 people are hormonal family planning acceptors Tanjung Rema Martapura, where 3 people use the pill and the remaining 3 people using KB injection. The result shows that there is a good influence of 1 month injection acceptor for the acceptor's cognitive function.

Craig and Murpy's research (2007) found that estrogen has an effect of balancing cognitive processes in healthy women and can slow the incidence of Alzheimer's (Craig, 2007). This is supported by the Yaffe (1998) study, in which estrogen therapy in postmenopausal women can improve cognitive function and reduce the risk of dementia (Yaffe, 1998). In addition, a similar study was conducted by Kampen (2004), found that in healthy postmenopouse women, the scores obtained

by estrogen users on cognitive tests were significantly higher than non estrogen users (Kampen, 2004).

Based on the above description, the researcher concludes the need for research on “The Use of Hormonal Contraceptive Family Planning Injecting 1 (one) Month with Cognitive Function on Acceptor in Work Area of Puskesmas Tanjung Rema Martapura Sub-district, Banjar Regency”.

MATERIAL AND METHOD

The design of this research is an analytical research with Cross Sectional approach. Population in this research is all acceptor at Tanjung Rema Health Center which based on data of annual report of Tanjung Rema Public Health Sub-district of Martapura Regency of Banjar acceptor in year 2010 as many as 1813 acceptor.

The sample obtained amounted to 34 people. Sampling was conducted by non-random sampling (non probability sampling) based on total population using purposive sampling method, namely hormonal contraceptive (1 month injection

and non 1 month injection contraception) with inclusion criteria as follows:

- Acceptor who has been using hormonal contraception ≥ 6 months of usage.
- Acceptor using hormonal contraception educated \geq SMA/equal.

Instruments used in this research are MMSE-Follstein sheets of basic data questionnaire (primary data), and visit register of acceptor (secondary data).

RESULT

a. The Usage of 1 Month Injecting Device

The number of respondents who used the injection of 1 month injection as many as 23 people (67,6%) and non 1 month injection as many as 11 people (32,4%) (Table 1).

b. The Distribution of Cognitive Functions of Respondents

Respondents mostly had a good cognitive function (52.9%). At least have dementia (2.9%) (Table 2).

Table 1. The frequency distribution of respondents based on the 1 month injection usage

No.	The contraceptive usage	frequency	%
1	1 month injection	23	67,6
2	Non 1 month injection	11	32,4
	Total	34	100

Table 2. The frequency distribution of respondents based on MMSE score

No.	Criteria	frequency	%
1	Dementia (0 – 19)	1	2,9
2	Dementia “ <i>Bonderline</i> ” (20 – 23)	5	14,7
3	Moderate cognitive function (24 – 27)	10	29,4
4	Good cognitive function (28 - 30)	18	52,9
	Total	34	100

c. Cross Distribution of Cognitive Functions Based on The Duration of Use

In this study also obtained a description of cognitive function based on the duration of hormonal contraceptive use. Length of use >1-2 years had a higher percentage for good cognitive function category (32.4%) (table 3).

d. Cross Distribution of Cognitive Functions Based on The Level of Education

based on the results of research obtained from 34 acceptor people seen that at the level of high school education there are 1 acceptors (2.9%) have Dementia and most acceptors (35.3%) who have good cognitive function is high school education (table 4).

e. Cross Distribution Based on Age

Respondents with the cognitive function category of dementia and borderline

dementia were in the age category >35 years. This is thought to be due to the influence of older age, hence the criterion of cognitive function also decreases (table 5).

f. Cross Distribution of Cognitive Function and 1 Month Injection Use

From 34 respondents, 23 people used 1 month injection and 11 people did not use 1 month injection (table 6).

The p-value <0.05, then H_0 is rejected and H_a accepted, means there is a correlation between the use of contraceptive hormonal 1 month injection with cognitive function. In addition, the value of Odds Ratio is 18.33. This shows that users of non-hormonal 1 month injections have an 18 times greater risk of decreased cognitive function.

Tabel 3. Distribution of cognitive function based on duration of use

Criteria	Duration of Use						Total
	6 month – 1 yrs	%	>1 – 2 yrs	%	>2 – 3 yrs	%	
Dementia	0	0	1	2,9	0	0	1 (2,9%)
Dementia Borderline	0	0	2	5,9	3	8,8	5 (14,7%)
Moderate cognitive function	4	11,8	3	8,8	3	8,8	10 (29,4%)
Good cognitive function	5	14,7	11	32,4	2	5,9	18 (52,9%)
Total	9	26,5	17	50	8	23,5	34 (100%)

Tabel 4. Distribution of cognitive function based on educational level

Criteria	Education Level				Total
	Senior high school	%	Academy/ university	%	
Dementia	1	2,9	0	0	1 (2,9%)
Dementia Borderline	4	11,8	1	2,9	5 (14,7%)
Moderate cognitive function	8	23,5	2	5,9	10 (29,4%)
Good cognitive function	12	35,3	6	17,6	18 (52,9%)
Total	25	73,5	9	26,5	34 (100%)

Tabel 5. Distribution of cognitive function based on age

Criteria	Age						Total
	<20 Years	%	20 -35 Years	%	>35 Years	%	
Dementia	0	0	0	0	1	2,9	1 (2,9%)
Dementia Borderline	0	0	3	8,8	2	5,9	5 (14,7%)
Moderate cognitive function	1	2,9	9	26,5	0	0	10 (29,4%)
Good cognitive function	0	0	18	52,9	0	0	18 (52,9%)
Total	1	2,9	30	88,2	3	8,8	34 (100%)

Tabel 6. Distribution of cognitive function and use of 1 month injection

Criteria	Cognitive Function				Total
	Dementia	Dementia "Borderline"	Moderate cognitive function	Good cognitive function	
Non 1 month injection contraception	1 (2.9%)	4 (11.8%)	3 (8.8%)	3 (8.8%)	11 (32.4%)
1 month injection contraception	0 (0%)	1 (2.9%)	7 (20.6%)	15 (44.1%)	23 (67.6%)
Total	1 (2.9%)	5 (14.7%)	10 (29.4%)	18 (52.9%)	34 (100%)

p-value = 0.008, OR=18.33

DISCUSSION

a. Cognitive Function Based on the Usage of Hormonal Contraception

Based on the results of the research, it is found that the duration of use >1 – 2 years has a higher percentage for the good luhur (32.4%). This suggests that the duration of 1 month of injectable contraception on an acceptor will be able to influence cognitive function. Decreased cognitive function can be prevented by the installation of 1 month injections containing estrogen.

Estrogen hormones are thought to have protective effects on brain cells (Craig, 2007). Based on several studies it is known that the role of estrogen in the brain, among others, improve the function of neonatal and the potential for memory formation so it is

estimated that the longer the acceptor using estrogen the better the cognitive function of the acceptor. This is reinforced by research conducted by Kimura (2005), in women with estrogen therapy had a better score than those who did not use estrogen.

b. Cognitive Function Based on Acceptor Education Level

From the results of research obtained from 34 acceptor people seen that at the level of high school education there are 1 acceptors with criteria Dementia. This is presumably because the age of the respondents is already reached 40 years.

This is in contrast to the results of research by Marcoen and Goossens (1993), where education has a positive correlation with the results of the intelligence test scores. According Finget in Prasetya (2008), an

important element in the development of cognitive function or one's intelligence is exercise and experience. Thinking exercises, formulating problems and solving them, and drawing conclusions will help one develop his cognitive thoughts and functions. So based on it education does not absolutely affect one's cognitive function.

This is supported by Barret-Connor and Kritz-Silverstein (2008) studies, the education level category did not show significant differences in acceptors who used estrogen therapy and who did not use it.

c. Cognitive Function Based on Acceptor Age

is known that respondents with cognitive function category of dementia and borderline dementia are in age category >35 years. This is thought to be due to the influence of older age, hence the criterion of cognitive function also decreases.

This is supported by research by Dewi (2005), where there is a significant correlation between age with cognitive development of children with $p=0.033$ ($p<0.05$). The more people get older the more changes occur in various systems in the body. Changes that occur tend to lead to the decline of various functions. In cognitive function there is a decrease in the ability to improve intellectual function, decreased efficiency of nerve transmission in the brain which causes the information process to slow down and much information lost during transmission, decreased ability to accumulate new information and retrieve information from memory (Pranarka, 2006).

d. The Use of Hormonal Contraception Based on Cognitive Function Acceptor

Based on the results obtained from the analysis of chi-square test of the total MMSE value on hormonal contraceptive acceptor (table 6) found that there is a relationship between the use of 1 month injections of contraception with cognitive function of respondents. This is estimated because of the addition of estrogen in the form of estradiol ciphionate as much as 5 mg on 1 month injection acceptor.

The hormone estrogen acts as a protective agent against brain cells. If the estrogen receptor is activated, then the memory system works more efficiently (Herdaetha, 2007). Estrogen binds to α and β receptors in neuronal cells and affects several neurotransmitter systems such as acetylcholine, dopamine, glutamate, noradrenaline, and serotonin.

Based on several studies, the role of estrogen in the brain, among others, is to improve neuronal function, modulate the synaptic plasticity, memory formation potential, increase Cerebral Blood Flow (CBF) and active transport glucose to the central nervous system, and neuroprotector in certain circumstances. The protective effects of estrogen on the brain include triggering cholinergic activity, reducing neuronal loss, axonal sprouting stimulation and dendritic spine formation, as well as reducing cerebral ischemia (Hogervorst, 2004).

The results of this study are supported by research conducted by Kimura (2005), which proves that in women with estrogen therapy have a better MMSE score than those

who do not use estrogen. Similarly, research conducted by Craig and Murphy (2007), found that estrogen has the effect of balancing cognitive processes in healthy women and the presence of estrogen can slow the incidence of Alzheimer's.

In addition, in table 11 it can also be seen that 1 in 23 respondents who used 1 month of injecting FP had a cognitive dysfunction of "borderline" dementia. This is allegedly due to age factors also affect. In the data recapitulation, it is known that the respondent is in the age category >35 years.

According to Hogervorst (2004), aging causes the brain to undergo aging process which results in disruption of various organs in the body such as the gastro-intestinal system, the genitor-urinary system, the endocrine system, the immunological system, the cerebrovascular system and the central nervous system.

Changes that occur in the brain from the molecular level, to the structure and function of brain organs. As a result of these changes, there will be a decrease in blood circulation to the brain in certain areas and metabolic disorders, neuro-transmitters, ventricular enlargement until finally atrophy of the brain, and brain weight decreased approximately 7% of the previous weight. As a result of the above, the phenomenon that arises is a structural and physiological changes, such as difficulty sleeping, behavioral disorders, sexual disorders, and cognitive disorders (Hogervorst, 2004).

The aging process of the brain includes atrophy of the hippocampus which is central to learning, memory, and emotional regulation.

Every decade, the hypothalamus will lose 5% neuron cells since middle age. The neuron cells will decrease slightly in the hypothalamus, the part of the brain that regulates hormone secretion. In addition, in the aging of the brain also occurs the change of the emergence of amyloid plaque and neurofibrillary tangle are similar in Alzheimer's disease. Therefore, getting older then the cognitive function of a person tends to decrease (Suwono, 2003).

The aging process in the brain causes estrogen hormones, especially estradiol, to not optimally optimize the brain. This is one of the causes of the occurrence of vascular abnormalities found in many Indonesians suffering from dementia. Based on these statements, it can be concluded that the aging process in postmenopausal female brains caused by low estrogen levels especially estradiol may increase the risk of dementia (Kugaya, *et al*, 2004; Hogervorst, 2004).

CONCLUSION

1. Respondents who used 1 month of injecting injection as many as 23 people (67.6%) and non-injection 1 month as many as 11 people (32.4%).
2. Number of respondents cognitive function category of dementia as much as 1 person (2.9%), borderline dementia as many as 5 people (14,7%), moderate noble function as much as 10 people (29,4%), and good noble function as many as 18 people (52.9%).
3. There was a significant correlation between the use of 1 month injection and the acceptor cognitive function ($p < \alpha$).

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