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The Knowledge and Attitude of a Post-Wife Mother Against Prevention of HIV Transmission in a New Born Baby in Jayapura Hospital

Ruth Yogi[a*], Marthina Mogan[b], Rosita Sumenda[c], Jems KR Maay[d], Arwam Hermanus[e], Marlin Jarona[f], [a,b,c,d,e,f]Department of Midwifery, Nursing Program, Environmental Health, Health Polytechnic Jayapura, Street Padang Bulan II Abepura, Jayapura, Papua, Indonesia, Email: [a*]ruthyogi@yahoo.com

The risk of transmission of HIV from mother to child is due to lack of knowledge and attitudes of mothers with HIV. There are 36.9 million people living with HIV, of which 13 million women are housewives. They experience pregnancy and childbirth with HIV and as many as 180 thousand children (0-14 years) are infected with the HIV virus with a trend that has decreased by 35% from 270 thousand to 180 thousand HIV occurrences in children with efforts to prevent transmission from mother to child (UNAIDS, 2018; p.1). The purpose of this study was to determine the relationship of knowledge and attitudes of postpartum mothers to the prevention of HIV transmission in newborns in Jayapura Regional Hospital. This research is a quantitative descriptive study with a cross sectional study approach. The population is postpartum mothers in Jayapura Hospital Delivery Room and the total sample is the total population carried out from March to May 2019 by as many as 31 postpartum mothers. Data was obtained using a questionnaire and analysed using the chi square test. Results of the study obtained knowledge of postpartum HIV mothers in Jayapura Regional Hospital about the prevention of HIV transmission in newborn infants in the category of less than 6 people (19.4%), enough categories as many as 18 people (58.1%) and good categories as many as 7 people (22.6%). The attitude of HIV postnatal mothers in Jayapura Regional Hospital regarding the prevention of HIV transmission to newborn babies in the category of not supporting as many as 13 people (51.9%) and attitudes that support as many as 18 people (58.9%). There is no correlation between Ibu Nifas's knowledge on the prevention of HIV transmission in newborns in

Jayapura Regional Hospital (p-value 0.654). There is a relationship between the attitude of Mother Nifas towards the prevention of HIV transmission in newborns in Jayapura Regional Hospital (p-value 0.008). Knowledge is not directly related to prevention of HIV transmission from mother to baby, but affects the attitude of mothers associated with preventing transmission of HIV from mother to baby, so it is recommended that more HIV counselling services for postpartum mothers with HIV be improved.

Key words: *Knowledge, Postpartum Mother's Attitude, Prevention, Infection of HIV Infants.*

Preliminary

HIV-AIDS is still a global health problem. Through research, it was found that a retrovirus called human immunodeficiency virus (HIV) is the causative agent in AIDS. In a short time, AIDS has increased to epidemic proportions throughout the world, affecting more than 40 million people today and killing so far more than 22 million (UNAIDS, 2001). (Che, Nazimah, & Amin, 2009; Liu & Kao 2018). The HIV virus can be transmitted from HIV infected mothers to their children during pregnancy, during delivery and while breastfeeding (Ministry of Health Republic of Indonesia, 2015). The United Nations Program on HIV and AIDS (UNAIDS; 2018) reports that 36.9 million people are living with HIV, of which 13 million women are housewives and experience pregnancy and childbirth with HIV and as many as 180 thousand children (0-14 years) are infected with the virus HIV. This has decreased 35% from 270 thousand to 180 thousand occurrences of HIV in children with efforts to prevent transmission from mother to child (UNAIDS, 2018; p. 1).

The cumulative number of HIV infections in 2018 was 301, 959 people (47% of the estimated ODHA number of people with HIV AIDS in 2018 of 640, 443 people) and the number of postpartum mothers suffering from HIV is 3, 020 cases with a risk of transmitting cases of 3.2% in newborns (Ministry of Health Republic of Indonesia, 2018).

The prevalence of HIV / AIDS cases in the Papua Province in 2018 was 39, 978 cases with the highest prevalence in women with as many as 20, 932 cases (52%) and transmission of HIV / AIDS from mother to child as many as 709 cases (Provincial Health Office, Papua, 2018). Data from Jayapura Regional Hospital Medical Records (2018), show that pregnant women were offered HIV testing as many as 1063. Pregnant women were HIV positive 30 (2.82%). Newborns were diagnosed with HIV transmission as many as 17 (1.59%) babies.

HIV Life Cycle

HIV belongs to a class of viruses called retroviruses carrying genetic information in the form of RNA. HIV infects T cells that carry antigens on their CD4 surface. Infection Viruses require fusion of viral and cellular membranes, a process mediated by envelope glycoprotein viruses (gp120, gp41) and receptors (CD4 and receptor, such as CCR5 or CXCR4) on target cells. When a virus starts cells, its RNA is transcribed into DNA by an enzyme-encoded virus, reverse transcriptase (RT). DNA viruses enter the cell nucleus, where they can be integrated into the cell's genetic material by the two enzymes that originate from the virus, integrase.

Host cell activation produces transcription from DNA viruses into messenger RNA, which is then translated into viral proteins. HIV protease, an enzyme that is coded for a third virus, is required in this step to cut the polyprotein virus precursor into individual adult proteins. RNA viruses and protein viruses begin on the surface of cells into new virions, which then shoot from cells and are released to infect other cells. The extensive cell damage from the genetic damage of the host system for beginners and the release of virions is directed to support cell death (Che et al., 2009; Malik & Khan 2013).

HIV Protease

On analysis of the HIV life cycle, one could conclude that there are several steps that might be interfered with, thus stopping the replication of the virus. For example, there are several commercially available drugs that inhibit the enzyme reverse transcriptase (RT). The first class of RT inhibitors is the nucleoside analogs such as AZT, ddI, ddC and d4T. These dideoxy compounds lack the 3-hydroxy, causing DNA chain termination when they are incorporated into the growing DNA strand. The second class of inhibitors is the non-nucleoside inhibitors (NNIs); these inhibitors are known to bind in a pocket away from the active polymerase site, and are believed to cause a conformational change of the active enzyme site, and thus inhibit its action. Currently, there are three available non-nucleoside reverse transcriptase inhibitors (nevirapine, delavirdine, and efavirenz) for the treatment of AIDS. Another critical step in the life cycle of HIV is the proteolytic cleavage of the polypeptide precursors into mature enzymes and structural proteins catalysed by HIV PR. It has been shown that budded immature viral particles that contain catalytically inactive protease cannot undergo maturation to an infective form. The necessity of this enzyme in the virus life cycle makes it is a promising target for therapy of the HIV infection (Che et al., 2009; Liu,et.al 2018).

Structure of HIV proteas

Navia et al. from Merck laboratories were the first group to obtain a crystal structure of HIV PR; 4 a more accurate structure was reported subsequently by Kent and co-worker HIV PR is a 99 amino acid aspartyl protease which functions as a homodimer with only one active site which is C2-symmetric in the free form. More than 140 structures of the HIV-1 PR, its mutants and enzymes complexed with various inhibitors have been reported so far. A database dedicated to providing structural information about HIV PR has been created at the National Cancer Institute (http://www-fbsc.ncifcrf.gov/HIVdb /). The enzyme homodimer complexed with TL-3 6 is shown in figure 1 (PDB ID: 3TLH). Each monomer contains an extended β-sheet region (a glycine-rich loop) known as the flap, that constitutes in part the substrate-binding site and plays important role in substrate binding, and one of the two essential aspartyl residues, Asp-25 and Asp-25 which lie on the bottom of the cavity. The substrate binds in its extended conformation, in which its interactions with the different amino acid side chains determine the specificity of the enzyme (figure 2), S1 and S1 (S2 and S2, etc.) structurally equivalent subsites. Two S1 subsites are very hydrophobic, S2 subsites are mostly hydrophobic except Asp-29, Asp-29, Asp-30 and Asp-30. That S3 subsite is close to S1 subsite and also most of it hydrophobic (Che et al., 2009; Magablih, 2018)

Mechanism of HIV Protease

Protease plays an important role in biological processes. Protease catalyses the hydrolysis of peptide bonds with high sequence selectivity and catalytic ability. Protease enzymes catalyse two major changes in enzyme classes. The first class of enzymes uses activated water molecules to attack amide carbonyl bonds from scissile substrate bonds. Activation of water molecules can be done by zinc cations (zinc metalloproteinases) or by two groups of aspartil β-carboxy at the active site (protease aspartate). In the second class of proteases, nucleophilic atoms from amino acid side chains are used to initiate amide hydrolysis. In the first step, nucleophilic atoms, which can form hydroxy groups or thiols, are activated by chains next to other amino acids. The activated nucleophile activates carbonyl from the scissile amide bond to form esters or combine acyl thioesters. Finally, this acyl is hydrolysed intermediate by water molecules to the corresponding hydrolysis product. According to some studies, HIV homework has been shown to belong to a class of aspartic proteases. Examining the homology sequence of HIV PR with other cellular Aspartic Protease determines that this enzyme has the Asp-Thr-Gly sequence, which is conserved among the aspartic protease enzymes. These results suggest that the HIV PR-1 enzyme may have structural features similar to aspartic protease enzymes and similar relationships. Indeed, mutational analysis by several groups of highly conserved Asp 25 has shown that replacing this residue with Asn, 2,9 Thr, 10 or Ala, 11 leads to proteins without proteolytic activity. More support for HIV PR

as a family member is given aspartic protease In vitro inhibition of this enzyme by pepstatin, a natural product that selectively inhibits members of this family. Finally, this three-dimensional structure also supports the classification of PR in the aspartic protease family. Dimer structure, where each monomer contributes one Asp-Thr-Gly triad to the active pseudo-symmetric site, search for the active site which cannot be distinguished from the monomer aspartic protease site (Che et al., 2009; Lee, Ismail & Sanusi 2018).

Research Method

This research is a quantitative descriptive study with a cross-sectional study approach, namely data collection conducted simultaneously at one time (Notoatmodjo, 2012; 25) to determine the relationship of knowledge and attitudes of puerperal mothers to the prevention of HIV transmission in newborns in Jayapura Regional Hospital. The population in this study were all postpartum mothers who had given birth and the sample was 31 people.

Research Result

Table 1: Postpartum maternal knowledge about prevention of HIV transmission in newborns

No	Knowledge	Frekuensi (n)	Percent (%)
1	Less	6	19.4
2	Enough	18	58.1
3	Well	7	22.6
Total		31	100

Table 1. Postpartum maternal knowledge about prevention of HIV transmission in newborns the highest category of knowledge was 18 people (58.1%) and the lowest was in the category of 6 people (19.4%).

Table 2: Postpartum mothers' attitudes about preventing HIV transmission in newborns

No	Attitude	Frekuensi (n)	Percent (%)
1	Does not support	13	51.9
2	Support	18	58.9
Total		31	100

Table 2. Postpartum mothers' attitudes about preventing HIV transmission in newborns in the highest category of attitudes that support as many as 18 people (58.9%). And the lowest category does not support as many as 13 people (51.9%).

Table 3: Postpartum mothers' actions in preventing HIV transmission to newborn babies

No	Action	Frekuensi (n)	Percent (%)
1	Less	8	25.8
2	Enough	12	38.7
3	Well	11	35.5
Total		31	100

Table 3. Actions of childbirth women in preventing HIV transmission in newborns the highest in the category of enough 12 people (38.7%) and the lowest in the category of less than 8 people (25.8)

Table 4: Relationship between Nifas mother's knowledge and prevention of HIV transmission in newborns

No	Knowledge	Prevention of HIV transmission In Newborns						Frekuensi (n)	%	*p value*
		Less		Enough		Well				
		Frek (n)	%	Frek (n)	%	Frek (n)	%			
1	Less	2	33.3	3	50	1	16.7	6	100	0.654
2	Enough	5	27.8	7	38.9	6	33.3	18	100	
3	Well	1	14.3	2	28.6	4.	57.1	7	100	
Total		8	25.8	12	38.7	11	35.5	31	100	

Table 4 shows that out of 6 respondents who have less knowledge 2 people (33.3%) who prevent HIV transmission to infants are lacking, enough actions are 3 people (50%) and good actions are 1 person (16.7%). Enough knowledge from 18 respondents there were 5 people (27.8%) preventive measures for HIV transmission in infants were lacking, enough actions were 7 people (38.9%) and good as many as 6 people (33.3%). Good knowledge from 7 respondents there is 1 person (14.3%) who prevent HIV transmission to infants less, enough action as many as 2 people (28.6%) and good actions as much as 4 people (57.1%). Chi square statistical test results on the significance value of 95% (= 0.05) obtained p-value of 0.654 or p> α (0.05), thus there is no relationship between the knowledge of Mother Postpartum knowledge to prevent HIV transmission in newborns at Home Jayapura Regional General Hospital.

Table 5: Relationship between Postpartum Mother's attitude to the prevention of HIV transmission in Newborns

No	Attitude	Prevention of HIV transmission in Newborns						n	%	*p value*
		Less		Enough		Well				
		n	%	n	%	n	%			
1 2	Does not support Support	7 1	53,8 5,6	4 8	30,8 44,4	2 9	15,4 50	13 18	100 100	0,008
Total		8	25,8	12	38,7	11	35,5	31	100	

Table 5. shows that out of 13 respondents who had an unsupportive attitude, there were 7 people (53.8%) who prevented HIV transmission to infants less, enough actions of 4 people (30.8%) and good actions of 2 people (15 , 4%). The postpartum mothers' attitude that supported out of 18 respondents was 1 person (5.6%) who prevented HIV transmission to infants less, enough actions of 8 people (44.4%) and good actions as many as 9 people (50%). Chi square statistical test results on the significance value of 95% (= 0.05) obtained p-value of 0.008 or p <α (0.05), thus there is a relationship between the postnatal mother's attitude towards the prevention of HIV transmission in newborns in Jayapura District Hospital .

Conclusion

The knowledge of postpartum HIV mothers in Jayapura Regional Hospital about the prevention of HIV transmission in newborns in the category of less than 6 people (19.4%), enough categories as many as 18 people (58.1%) and good categories as many as 7 people (22.6%). Postpartum HIV attitudes in Jayapura Regional Hospital regarding the prevention of HIV transmission to newborn babies in the category of not supporting as many as 13 people (51.9%) and there is no relationship of knowledge of Postpartum mothers to the prevention of HIV transmission in newborns in Jayapura Regional Hospital (p-value 0.654). There is a relationship between the attitude of Mother Nifas towards the prevention of HIV transmission in newborns in Jayapura Regional Hospital (p-value 0.008).

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