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# Description of hydrocephalus knowledge in pregnant woman at Puskesmas 1 Denpasar Utara



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## ABSTRACT

**Background:** Hydrocephalus is a pathological brain disorder resulting from increased cerebrospinal fluid without or with elevated intracranial pressure resulting in widening of the space where cerebrospinal fluid flows. Maternal environment such as experiencing infection during pregnancy, consuming alcohol and drugs, lifestyle such as obesity, diabetes, or hypertension, and lack of examinations in preparing for prenatal care and low socioeconomic status affect the risk factors for congenital hydrocephalus. The purpose of this study is to determine awareness and knowledge level among pregnant women towards hydrocephalus.

**Methods:** This descriptive research was conducted with a cross-sectional method using consecutive sampling as a sampling technique. 106 Pregnant Women at Puskesmas 1 Denpasar Utara was involved in completing the survey regarding Hydrocephalus

**Keywords:** Hydrocephalus, Knowledge, Pregnant Women.

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during this research. For the collecting data using a questionnaire filled directly by each respondent containing 9 questions and then analyzed using the software Statistical Package for the Social Sciences (SPSS).

**Results:** This study was participated by 106 respondents and figured that approximately 84,9% among the total number of respondents have a good knowledge of hydrocephalus while the rest, 15,1% are still at a low level with common characteristics of the respondents, including the age of 24 years old (age group 19-25), multipara (59.4%), with a college education background (45.3%), and working as a housewife (59.4%).

**Conclusion:** This study conveys good knowledge about hydrocephalus in pregnant women, especially those who have a good level of education.

## INTRODUCTION

*Hydrocephalus* is an illness due to brain pathological abnormality due to increased intracranial pressure caused by accumulation of cerebrospinal fluids in normal ventricular system.<sup>1</sup> Based on its formation, hydrocephalus is divided into two which are congenital hydrocephalus and acquired hydrocephalus. Congenital hydrocephalus is a hydrocephalus that occurs during pregnancy and continues after birth.<sup>2</sup>

Prevalence of hydrocephalus globally was reported to be quite high, whereas in Netherlands and United States, it was reported that 0.65 and 2 per mille cases occurred per year.<sup>3</sup> In Indonesia alone, it was reported that hydrocephalus

cases reached approximately 10 per mil. Neurosurgery department in Medan, North Sumatera, reported that pediatric hydrocephalus cases reached 40%-50% from total patients who came to neurology and neurosurgery clinics or underwent surgery.<sup>4,5</sup>

Congenital hydrocephalus has risk factors due to maternal environment or due to low birth weight, experienced premature birth complication, and cardiovascular instability.<sup>6</sup> Risks due to maternal environment includes infection during pregnancy, consuming alcohol and drugs, lifestyle such as obesity, diabetes, and hypertension, lack of intensive prenatal care, and low social-economic condition.<sup>7</sup>

Patients with hydrocephalus usually

have decreased intellectual capacity, motoric deficit, and lowered quality of life due to children's behavior. This results hydrocephalus as a disease that impact the health and intelligence of the patients.<sup>8</sup> General people assume that hydrocephalus patients only have megacephaly (enlarged skull), while very few know that hydrocephalus patients may not have intelligence level (IQ) that is sufficient due to the illness that affect the function and work of the brain. This causes the patients not being able to grow and develop as good as the children their age.<sup>1</sup>

This aimed to determine the knowledge of pregnant mothers regarding hydrocephalus, hence preventive measures may be taken during pregnancy.

## METHODS

The study design itself was the quantitative descriptive design using a cross sectional approach. It has been approved by Udayana University's Faculty of Medicine's ethics committee with the protocol number 2021.01.1.0249. Samples were taken using the consecutive sampling method on 106 pregnant women who were receiving antenatal care in Puskesmas I in Denpasar Utara and fulfilled both the applied inclusion and exclusion criteria. Inclusion criteria in this study were pregnant women who had an examination at Puskesmas I Denpasar Utara, meanwhile the exclusion criteria were pregnant women who were not willing to become research respondents. Data was collected primarily using a questionnaire filled directly by each respondent containing 9 questions and then analyzed using the software Statistical Package for the Social Sciences (SPSS) with several stage that is editing, coding, and tabulating then presented both in table and narrative form.

## RESULTS

The common characteristics of the respondents include the age of 24 years old (age group 19-25), multipara (59.4%), with a college education background (45.3%), and working as a housewife (59.4%) as is shown in Table 1.

This study was participated by 106 respondents, 84.9% with moderate to good on hydrocephalus and 15.1% with low level of knowledge on hydrocephalus (Table 2).

### Level of Knowledge Based on Age Group

The results of this research show that moderate to good knowledge about hydrocephalus are mostly found in respondents aged 36-45 (90%), 26-35 (86.1%), and 19-25 (83%) respectively (Table 3).

### Knowledge Level Based On Gravida Groups

In this study, it is found that the moderate to good regarding hydrocephalus were higher in the multipara group (82,5%) (Table 4).

**Table 1. Characteristics respondents.**

| Characteristics      | Frequency (n) | Percentage (%) |
|----------------------|---------------|----------------|
| Age (year)           |               |                |
| 19-25                | 53            | 50             |
| 26-35                | 43            | 40.6           |
| 36-45                | 10            | 9.4            |
| Gravida              |               |                |
| Nullipara            | 43            | 40.6           |
| Multipara            | 63            | 59.4           |
| Level of Education   |               |                |
| Elementary school    | 7             | 6.6            |
| Junior high school   | 5             | 4.7            |
| High school          | 46            | 43.4           |
| College              | 48            | 45.3           |
| Occupation           |               |                |
| Housewife            | 63            | 59.4           |
| Private Sector       | 34            | 32.1           |
| Government employees | 1             | 0.9            |
| Entrepreneur         | 8             | 7.5            |

**Table 2. Level of knowledge of pregnant women about hydrocephalus.**

| Variable  | Frequency (n) | Percentage (%) |
|-----------|---------------|----------------|
| Knowledge |               |                |
| Poor      | 16            | 15.1%          |
| Moderate  | 26            | 24.5%          |
| Good      | 64            | 60.4%          |

**Table 3. Level of knowledge based on age group.**

| Age group (year) | Poor n (%) | Moderate n (%) | Good n (%) |
|------------------|------------|----------------|------------|
| 19-25            | 9 (17.0)   | 17 (32.1)      | 27 (50.9)  |
| 26-35            | 6 (14.0)   | 6 (14.0)       | 31 (72.1)  |
| 36-45            | 1 (10.0)   | 3 (30.0)       | 6 (60.0)   |

**Table 4. Level of knowledge based on gravida group.**

| Gravida Group (year) | Poor n (%) | Moderate n (%) | Good n (%) |
|----------------------|------------|----------------|------------|
| Nullipara            | 5 (11.6)   | 13 (30.2)      | 25 (58.2)  |
| Multipara            | 11 (17.5)  | 13 (20.6)      | 39 (61.9)  |

**Table 5. Level of knowledge based on education background.**

| Education Background | Poor n (%) | Moderate n (%) | Good n (%) |
|----------------------|------------|----------------|------------|
| Elementary school    | 7 (100.0%) | 0 (0.0)        | 0 (0.0)    |
| Junior high school   | 3 (60.0%)  | 2 (40.0)       | 0 (0.0)    |
| High school          | 2 (4.3)    | 18 (39.1)      | 26 (56.5)  |
| College              | 4 (8.3)    | 6 (12.5)       | 38 (79.2)  |

### Level of Knowledge Based on Education Background

In this study it was found that moderate to good knowledge about hydrocephalus is found more commonly in pregnant women with college level education (91.7%) and high school diploma (95.6%) (Table 5).

### Level of Knowledge based on Occupation

In this study, respondents with moderate to good knowledge about hydrocephalus often work as either a housewife (76.2%) or a private sector employee (97%) (Table 6).

## DISCUSSION

In this study, the pregnant mothers who had good knowledge about hydrocephalus were much higher than previous research conducted in Irrua hospital in Nigeria. It was reported that pregnant mothers who had good knowledge was 48%, moderate knowledge was 26%, and low knowledge was also 26%.<sup>9</sup>

Knowledge on hydrocephalus was moderate and good on age group 19-25 years old, while the study conducted by Eghosa Morgan et al. found good knowledge as much as 37% in group 20-29 years old.<sup>9</sup> This might be caused by anxiety related with pregnancy condition, especially in young age who were experiencing first pregnancy (nullipara) and had high curiosity to take care of the pregnancy well. Anxiety during pregnancy is an often-occurring reaction where the mothers had anxiety towards themselves and their babies, continuity of their pregnancy, labor and post-labor time, and about becoming a mom.<sup>10</sup>

Based on the gravida group, most of them were nullipara, while the multipara group had a good knowledge level. Research conducted by Nilda Siregar et al. in primary care Mapane in Poso Kabupaten, Middle Sulawesi, it was known that 60% of the pregnant mothers on first pregnancy (nullipara) experienced anxiety.<sup>11</sup> It is estimated that mothers experiencing first pregnancy (nullipara) have higher anxiety level than mothers who have experienced pregnancy previously (multipara).<sup>12</sup>

The education background heavily affects the level of education about hydrocephalus. Pregnant women with a college background have a good enough level of knowledge. A study that was conducted by Eghosa morgan et al. in Irrua Hospital, Nigeria stated that a good level of education is very influential towards the level of knowledge about hydrocephalus.<sup>9</sup> The environment and type of information that was received during their formal education also affected the level of knowledge. In which, someone with a high level of education background, such as college, gets the chance to receive more information that affects their experience and mindset.

**Table 6. Level of knowledge based on occupation.**

| Occupation           | Poor n (%) | Moderate n (%) | Good n (%) |
|----------------------|------------|----------------|------------|
| Housewife            | 15 (23.8%) | 15 (23.8)      | 33 (52.4)  |
| Private sector       | 1 (2.9%)   | 8 (23.5)       | 25 (73.5)  |
| Government employees | 0 (0.0)    | 0 (0.0)        | 1 (100.0)  |
| Entrepreneur         | 0 (0.0)    | 3 (37.5)       | 5 (62.5)   |

Based on the occupation, housewives were found to have a low level of knowledge regarding hydrocephalus. This might be caused by the limited time owned by housewives to access hydrocephalus-related information, whether it was through social media, internet, printed media, and others. Based on Archana Singh and Nishi Misra, women colleagues who became housewives spent their time in house and found enjoyment through daily activities.<sup>13</sup>

The limitation of this study is that when the respondent sampling process was carried out by consecutive sampling, respondents who came to Puskesmas 1 Denpasar Utara could not represent all respondents who were pregnant women in the Puskesmas area, considering that the polyclinic schedule was only open in the morning, so it could not accommodate pregnant women who did not come on that schedule.

In the process of collecting data, several respondents were doing other activities, so they did not concentrate on answering, so there was the potential for information bias.

## CONCLUSION

Based on the findings of the conducted study, pregnant women have a good enough level of knowledge about hydrocephalus. The majority of respondents with good knowledge is found in pregnant women age 26-35 years experiencing first pregnancy or nullipara with college level education background and working as a private sector employee.

Collaboration between healthcare professionals and institutions is needed in order to provide education on hydrocephalus among pregnant women who fall under the age of 19-25 years old, with multiple pregnancies, primary to secondary school level education, and are working as a housewife.

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## ETHICAL CLEARANCE

This study was approved approved by Udayana University's Faculty of Medicine's ethics committee with the protocol number 2021.01.1.0249. The research was conducted in accordance with several ethical principles, namely anonymity and confidentiality.

## CONFLICT OF INTEREST

None declared.

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## AUTHOR'S CONTRIBUTION

All authors have the same contribution in writing this research report

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