# ASSESSING INDIVIDUAL PERCEPTION IN UTILIZATION OF NON-COMMUNICABLE DISEASES POST (NCDS POST) USING A HEALTH BELIEF MODEL (HBM) APPROACH

*Penilaian Persepsi Individu Dalam Pemanfaatan Posbindu Penyakit Tidak Menular (PTM) Menggunakan Pendekatan Health Belief Model (HBM)*

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***ABSTRAK***

*Fasilitas Posbindu PTM telah menjadi komponen penting dalam kebijakan kesehatan. Penelitian mengungkapkan bahwa hal tersebut belum dimanfaatkan secara optimal. Penelitian ini bertujuan untuk mengetahui hubungan persepsi peserta dengan pemanfaatan Posbindu PTM. Penelitian menggunakan desain cross-sectional dan dilakukan di lima provinsi di Indonesia. Pengumpulan data dilakukan dengan wawancara dan pengisian kuesioner pada bulan Agustus-Oktober 2021. Analisis dilakukan dengan uji statistik beda mean. Kami melibatkan 420 peserta dalam penelitian ini. Hasil penelitian menunjukkan sebagian besar peserta rentan terhadap PTM (52,6%). Peserta menilai seseorang yang menderita PTM memberikan dampak yang serius (53.6%), mengelola dan memeriksa kesehatan di Posbindu PTM mempunyai manfaat dalam mencegah PTM (62.6%), seseorang yang menderita PTM menimbulkan dampak yang serius (71.4%), melakukan kegiatan yang bermanfaat untuk menjaga kesehatan secara rutin khususnya pencegahan PTM (69,0%), mempunyai kemampuan, pengendalian, dan mempunyai cara untuk mencegah PTM (65,2%). Hasil uji beda rata-rata menunjukkan bahwa rata-rata rangking seluruh penilaian persepsi HBM peserta yang aktif mengikuti kegiatan Posbindu PTM lebih tinggi dibandingkan peserta yang kurang aktif (p<0,05). Pemanfaatan aktif Posbindu PTM mempunyai hubungan dengan persepsi peserta khususnya terhadap tingkat keparahan suatu penyakit, kerentanan seseorang terhadap penyakit, manfaat mengetahui risiko kesehatan, hambatan dalam melakukan pemeriksaan kesehatan, petunjuk tindakan, dan efikasi diri pasien terhadap penyakitnya.*

***Kata kunci**: health belief model, Posbindu PTM, persepsi, pemanfaatan*

**ABSTRACT**

The NCDs Post facility has been an essential component of health policy. Rather, numerous studies have revealed that it has not been used optimally. This study aimed to determine the relationship between patients' perceptions and NCD Post utilization. The study used a cross-sectional design and was conducted in five provinces in Indonesia. Data collection was carried out by interviewing participants and filling out questionnaires from August-October 2021. The analysis was carried out using the mean difference statistic test. We involved 420 participants in this study. The results showed that the majority of participants were susceptible to NCDs (52.6%). Participants assessed that someone suffering from NCDs had a serious impact (53.6%), managing and checking health such as the NCDs Post had the benefit of preventing NCD (62.6%),

someone suffering from NCDs causing a serious impact (71.4%), doing activities that are useful for maintaining health regularly, especially the prevention of NCDs (69.0%), have the ability, control, and ways to prevent NCDs (65.2%). The results of the average difference test show that the mean ranking of all HBM perception assessments of participants who actively use NCDs Post is higher than those who are less active (p<0, 05). The active utilization of the NCDs Post has a relationship with participants' perception, particularly on the level of severity of a disease, one's vulnerability to developing the disease, benefits of knowing the health risk, obstacles of getting the medical check-up, action cues, and patient's self-efficacy to the disease.

**Keywords:** health belief model, NCDs Post, perception, utilization

## INTRODUCTION

The world's elderly population has grown significantly. Indonesia ranks among the top five countries in the world in terms of the number of elderly people. According to the 2010 population census, the number of elderly people in Indonesia was 18.1 million (7.6 percent) of the total population. The number of elderly people in Indonesia increased to 18.781 million in 2014, and it was predicted to reach 36 million by 2025 [1]. The number of elderly people in Indonesia was 16 million in 2002 and was predicted to rise to 25.5 million by 2020, accounting for 11.37 percent of the population, it is ranked fourth in the world after China, India, and the United States [2]. The elderly were known to be vulnerable to disease, particularly NCDs. In 2020, the elderly morbidity rate was 24.35 percent. The growing elderly population requires special attention, particularly in improved quality of life to maintain their health [3].

Indonesia has enacted various laws and regulations, including those stated in Law No. 17 of 2023 concerning Health, Article 52, which states that efforts to maintain health for the elderly must be aimed at maintaining a healthy and productive life socially and economically by human dignity. As a result, various efforts were made to provide the elderly with a healthy, happy, efficient, and productive life [4]. The establishment of NCDs Post for the elderly was one of the programs provided by the government for the welfare of the elderly. NCDs Post, or integrated coaching post of NCDs, was a primary health care program promoting community participation through activities aimed at the local community, especially in prevention of NCDs [2]. According to the Ministry of Health of Indonesia, the number of NCDs Post reported in 2018 was 38.486, which is equal to half of all villages in Indonesia, indicating that their utilization is still inadequate [5–7].

The participant's behaviour was extremely important in terms of the continuity of activities at NCDs Post. The Health Belief Model (HBM) was one of the behavioural theories widely used regarding the relationship between NCDs and participant activity [8, 9]. This theory assessed participants' perceptions of NCDs Post activities based on participant internal factors. This was because internal factors play a significant role in deciding whether or not to take action. Based on this context, more research was needed to assess participants' active engagement in NCDs Post activities using the HBM theory.

## METHODS

The study used a cross-sectional design and was conducted in five provinces in Indonesia that had a higher percentage scope of NCDs post-utilization. The research sites were chosen using SI-PTM (Non-Communicable Disease Information System) data from the Indonesian Ministry of Health's in 2020. The provinces for the research site were chosen by ordering them based on the proportion of coverage of the most NCDs Post. Five provinces with the highest percentage of coverage were chosen, such as DKI Jakarta, West Java, East Java, West Nusa Tenggara, and West Kalimantan. The district/city of each province selection is based on the district with the highest NCDs Post

coverage. The districts selected are Central Jakarta, Cirebon, Situbondo, West Lombok, and Pontianak. The selection of Puskesmas in each district is based on Puskemas' activity in carrying out NCD's Post activities over the last two years. The NCDs Post selected were those who met the research criteria based on data from the District Health Office, and six NCDs Post were randomly selected and sampled in this study.

Determination of the sample size of NCDs Post participants for quantitative data collection using the formula for calculating the proportion of one group with absolute precision. According to calculations, the minimal sample size is 375 respondents. To meet the minimum sample size requirements, 14 participants were chosen as respondents in each NCDs Post sampled. The data was extracted by specially trained staff for this study by interviewing participants and filling out questionnaires from August to October 2021. Exclusion criteria from the study were participants with communication problems who were unwilling to participate. Before data collection, legally qualified respondents are asked to sign informed consent forms. The group of 15-18 years and the elderly who are unable to legally sign informed consent can fill out an assent form that their companion must complete.

Data collected include subject characteristics and their perception of NCDs Post utilization using the HBM framework. The adapted questionnaire included perceived susceptibility due to side effects of suffering from NCDs (perceived susceptibility), perceived severity due to disease complications (perceived severity), perceived benefits from properly handling NCDs (perceived benefit), and high self-confidence. Perceived when carrying out NCDs prevention activities (perceived self-efficacy) and perceived barriers to behaviour that can prevent NCDs (perceived barrier). For this analysis, utilization of NCDs post was divided into 2 categories (less active and active). Active participants were defined as participants who came to NCDs Post a minimum of four times in 2019. Less active was defined as participants who came to NCDs Post less than four times in 2019.

Age was categorized into youth (15-24 years), adults (25-59 years), and older adults (≥60 years) [10], gender was divided into 2 categories (male and female), history of NCDs was divided into 2 categories (NCD and non-NCD), education was categorized into 3 groups (primary school, secondary school, and undergraduate/graduate school). The occupation was divided into 2 categories (unemployed and employed), and the participant’s family income was divided into 3 groups (<1 million, 1-5 million, and >5 million rupiah). A questionnaire based on the Health Belief Model theory was used to collect data on participants' perceptions using a Likert scale (5: strongly agree, 4: agree, 3: undecided, 2: disagree, 1: strongly disagree) which was grouped into 5 categories based on the mean score from 1.00 – 5.00 in each category. A Mann-Whitney-U statistic test was used to identify the differences between each perceived NCDs. Ethical approval was obtained from the Ethics Committee of the National Institute of Health Research and Development Ministry of Health Republic of Indonesia numbered: LB.02.01/2/KE.499/2021.

## RESULT

According to the respondents' characteristics (Table 1) from 420 samples from five provinces, most respondents were between 25 and 59 years old, classified as productive or early workers pre-retirement. Table 1 shows the other characteristics of respondents.

**Table 1. Characteristics of Respondents**

| Characteristics | n | % |
|---|---|---|
| Age (years) | | |
| 15-24 | 67 | 16.0 |
| 25-59 | 230 | 54.8 |

| | | |
|---|---|---|
| > 60 | 123 | 29.3 |
| Gender | | |
| Male | 83 | 19.8 |
| Female | 337 | 80.2 |
| History of NCD | | |
| NCD | 217 | 51.7 |
| Non-NCD | 203 | 48.3 |
| Education | | |
| Primary school | 149 | 35.5 |
| Secondary school | 238 | 56.7 |
| Undergraduate/Graduate school | 33 | 7.9 |
| Occupation | | |
| Unemployed | 295 | 70.2 |
| Employed | 125 | 29.8 |
| Income (monthly) in rupiah (IDR) | | |
| < 1 million | 188 | 44.8 |
| 1 - 5 million | 215 | 51.2 |
| > 5 million | 17 | 4.0 |

Table 2 shows the six indicators analyses on the HBM framework, the majority of participants rated themselves as vulnerable to NCDs (52.6%). Only 37.4% of participants thought they were very vulnerable to NCDs. More than half of the participants assessed that someone suffering from NCDs had a severe impact. The remaining thought that suffering from NCDs had a very severe impact (29.3%). The majority of participants (62.6%) assessed that managing and checking their health, such as going to NCDs Post had the benefit of preventing NCDs and someone suffering from NCDs caused serious barriers (71.4%). Only 2.6% of participants considered that suffering from NCDs did not have serious barriers. Subsequently, 69.0% of participants often take useful actions to maintain health, especially in preventing NCDs. and only 65.2% of participants assessed that they could control and look for ways to prevent NCDs.

**Table 2. Category of Participant Score for Health Belief Model Components**

| Score | N | % |
|---|---|---|
| **Perceived susceptibility** | | |
| Very invulnerable (mean score 1,00 < $\bar{x}$ ≤ 1,80) | 0 | 0,0 |
| Invulnerable (mean score 1,80 < $\bar{x}$ ≤ 2,60) | 17 | 4,0 |
| Neutral (mean score 2,60 < $\bar{x}$ ≤ 3,40) | 25 | 6,0 |
| Vulnerable (mean score 3,40 < $\bar{x}$ ≤ 4,20) | 221 | 52.6 |
| Very vulnerable (mean score 4,20 < $\bar{x}$ ≤ 5,00) | 157 | 37.4 |
| **Perceived Seriousness** | | |
| Slight (mean score 1,00 < $\bar{x}$ ≤ 1,80) | 0 | 0,0 |
| Mild (mean score 1,80 < $\bar{x}$ ≤ 2,60) | 29 | 6.9 |
| Moderate (mean score 2,60 < $\bar{x}$ ≤ 3,40) | 43 | 10.2 |
| Severe (mean score 3,40 < $\bar{x}$ ≤ 4,20) | 225 | 53.6 |
| Very severe (mean score 4,20 < $\bar{x}$ ≤ 5,00) | 123 | 29.3 |
| **Perceived benefit** | | |
| Very useless (mean score 1,00 < $\bar{x}$ ≤ 1,80) | 0 | 0.0 |

| | | |
|---|---|---|
| Useless (mean score 1,80 < x̄ ≤ 2,60) | 3 | 0.7 |
| Neutral (mean score 2,60 < x̄ ≤ 3,40) | 25 | 6.0 |
| Useful (mean score 3,40 < x̄ ≤ 4,20) | 263 | 62.6 |
| Very useful (mean score 4,20 < x̄ ≤ 5,00) | 129 | 30.7 |
| **Perceived Barrier** | | |
| Slight (mean score 1,00 < x̄ ≤ 1,80) | 2 | 0.5 |
| Mild (mean score 1,80 < x̄ ≤ 2,60) | 9 | 2.1 |
| Moderate (mean score 2,60 < x̄ ≤ 3,40) | 58 | 13.8 |
| Severe (mean score 3,40 < x̄ ≤ 4,20) | 300 | 71.4 |
| Very severe (mean score 4,20 < x̄ ≤ 5,00) | 51 | 12.1 |
| **Cues to Action** | | |
| Never (mean score 1,00 < x̄ ≤ 1,80) | 0 | 0.0 |
| Rarely (mean score 1,80 < x̄ ≤ 2,60) | 1 | 0.2 |
| Sometimes (mean score 2,60 < x̄ ≤ 3,40) | 43 | 10.2 |
| Often (mean score 3,40 < x̄ ≤ 4,20) | 290 | 69.0 |
| Always (mean score 4,20 < x̄ ≤ 5,00) | 86 | 20.5 |
| **Self-Efficacy** | | |
| Very unable (mean score 1,00 < x̄ ≤ 1,80) | 0 | 0.0 |
| Unable (mean score 1,80 < x̄ ≤ 2,60) | 5 | 1.2 |
| Neutral (mean score 2,60 < x̄ ≤ 3,40) | 35 | 8.3 |
| Capable (mean score 3,40 < x̄ ≤ 4,20) | 274 | 65.2 |
| Very capable (mean score 4,20 < x̄ ≤ 5,00) | 106 | 25.2 |

The average difference test results (Table 3) shows that the mean ranking of all HBM indicator's perception assessments of participants who actively use NCDs Post (4 times a year) was higher than those who were less active in using NCDs Post (3 times a year) and statistically significant between groups ($p$<0.05).

**Table 3. The Average Value of HBM Perceptions of Active and Less Active NCDs Post Participants in The Utilization of NCDs Post**

| | Utilization of NCDs Post | | | | | | Mann-Whitney-U | p-value |
|---|---|---|---|---|---|---|---|---|
| | Less Active | | | Active | | | | |
| | Mean | SD | Mean Rank | Mean | SD | Mean Rank | | |
| Perceived Seriousness | 3.744 | 0.800 | 179.04 | 4.031 | 0.711 | 222.94 | 14166 | 0.001 |
| Perceived Susceptibility | 3.926 | 0.736 | 179.76 | 4.184 | 0.619 | 222.65 | 14252 | 0.001 |
| Perceived Benefit | 4.062 | 0.531 | 182.48 | 4.243 | 0.531 | 221.58 | 14575 | 0.002 |
| Perceived Barrier | 3.573 | 0.489 | 149.11 | 3.890 | 0.457 | 234.77 | 10604 | 0.005 |
| Cues to action | 3.833 | 0.579 | 179.89 | 4.038 | 0.574 | 222.60 | 14266.5 | 0.001 |
| Self-Efficacy | 3.849 | 4.096 | 179.08 | 4.096 | 0.574 | 222.92 | 14170.5 | 0.005 |

## DISCUSSION

The Health Belief Model theory was based on the assumption that a person will engage in health-related behaviours. According to the Health Belief Model theory, a

person's perception of vulnerability to disease, potential threats, motivation to reduce vulnerability to disease, the belief that behaviour change can provide benefits, individual assessment of the changes offered, interaction with healthcare workers who recommend behaviour changes, and experience trying similar behaviours all influence a person's self-efficacy in carrying out a health action [11].

Perceived susceptibility is a person's belief in his or her vulnerability, which has an impact on health and encourages a person to change to healthier behaviour. Our study results showed that the more individuals perceive their vulnerability to health, the more active they participate in NCDs Post activities. The core activities of the NCDs Post include (1) screening for NCDs, namely hypertension and diabetes; (2) assessing risk factors, such as smoking, food, and physical activity; (3) health education; and (4) facilitating referral to primary health care [12]. The findings of this study support the earlier stated concept that a person will act if he perceives himself to be vulnerable to the disease. The participant's experience, among other things, influences the positive relationship between perceived susceptibility and active participation in NCDs Post activities [13]. For the person to act to treat or prevent his/her illness, he/she must believe that they were vulnerable to the disease. So, suppose a person believes he is not susceptible to the disease. In that case, it is necessary to provide more intense stimulation or trigger the desired response, by actively participating in NCDs Post activities. Low perceived susceptibility to a disease can be caused by a lack of knowledge about the disease's hazards [14].

The severity of an illness is determined by an individual's perception of its severity. Furthermore, perceived severity can result from an individual's belief in the severity of the disease and the impact of the disease on his life [15]. This study's findings indicate that there was a correlation between perceived severity and participants' active participation in NCDs Post activities. These findings are consistent with the HBM concept, which states that the perception of severity is an individual's belief in the severity of the disease encountered. Our findings were also consistent with previous studies in the theory of the Health Belief Model, which states that taking action to prevent the occurrence of a disease or seeking treatment is influenced by perceptions of the seriousness that may be felt when suffering from a disease [16]. The perception individual's assessment of the illness severity can capture the point of view that encourages a person to seek disease treatment. This condition was intensified by the consequences of a disease, which include death, reduced physical and mental function, disability, and social life impact [16].

Perceived benefits have a significant positive relationship with participants' willingness to come to NCDs Post. The elemental reason they accepted was that after taking preventive activity through NCDs Post, they would have certainty that sufferers would recoup, so changing their attitude around the existence and benefits of NCDs Post was imperative. This proves that compliance was positively related to the perception of the benefits in terms of disease prevention and cure [17]. This was consistent with the study's findings, which showed that perceived benefit has a significant positive relationship with actively participating in activities at NCDs Post. Furthermore, perceived benefits play an important role in determining disease prevention behaviour [15]. As a result, NCDs Post participants must believe that the benefits of healthy behaviour were critical for their well-being [9].

Perceived barriers were components that harm individuals and will be a barrier to having healthy behaviour; the purpose of the HBM theory in dealing with a problem was the perceived obstacle to change. The individual will evaluate the obstacles he/she encounters, and the evaluation will be carried out by changing the behaviour. NCDs Post participants in the youth and adult, which are productive age group, felt it difficult to take part in activities because it was held on weekdays. A possible solution is to carry out those activities on holidays or carry out home visits by cadres, so they can practice

healthy behaviour in their own families. Perceived barriers have an important role in determining behaviour change in individuals [15]. Every NCDs Post participant faced challenges in adhering to the schedule and participants agreed that NCDs cannot be completely cured with medication and that eating healthy food is expensive. Developing novel activities, such as Mobile NCDs Post, to overcome people's reluctance to visit NCDs Post locations. Collaboration with local community-based activity organizers can help to attract more young people to visit NCDs Post. The NCD Post will be integrated into community activities such as schools, Posyandu, and village health posts. In addition, more NCD Post cadres must be trained. Contrary to that, 70% of participants stated that attending a health check at the NCDs Post was not time-consuming, cheap, or confident. Because of these challenges, the participants were more committed. Participants who did not face any barriers to healthy living will find it easier to participate actively in activities at NCDs Post. Many obstacles must be overcome for a person to be able to take a health action, and the majority of these obstacles arise as a result of a person evaluating the obstacles to the new behaviour being carried out [18].

Beliefs and perceptions can be linked to a person's motivation. According to HBM, individual health actions were triggered by motivation and positively influenced by perceived self-efficacy that they can change their behaviour or lifestyle to prevent NCDs. With this, it will motivate them to take action. This analysis was reinforced by previous research which shows that adherence to therapy was a form of embodiment of self-efficacy in patients [19].

Some of the limitations of this study include the findings of this study cannot be generalized to the entire population of NCDs Post participants because the research sample was obtained through purposive sampling method, the selected NCDs Post samples obtained in this study are all active NCDs Post, as the NCDs Post available at the sample locations are NCDs Post that were active in the year 2019, and the data collectors/enumerators responsible for collecting data from Posbindu PTM participants are health center officers appointed by the health center, which may lead to bias in participant responses.

## CONCLUSION

The active utilization of the NCDs Post has a relationship with participants' perception, particularly on the level of severity of a disease, one's vulnerability to developing the disease, benefits of knowing the health risk, obstacles of getting the medical check-up, action cues, and patient's self-efficacy to the disease. Participants' knowledge about NCDs needs to be increased to improve awareness in conducting health screening for NCDs Post. For example, providing health education by trained cadres and health workers is needed to improve participants' knowledge of NCDs.

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