

Diagnosis of Baby Blues Syndrome using the Certainty Factor Method (Case Study: FULL BETHESDA Hospital)

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Abstract

Baby blues syndrome is a psychological disorder experienced by women after giving birth, such as feeling excessively upset and sad, and tired for no apparent reason. About 80% of women who have just given birth will experience Baby blues Syndrome, if this continues and is prolonged it will be very dangerous for the health of the mother and baby. From the problems above, the hospital needs to have an additional system that can help make it easier for the medical team to speed up handlers in analyzing and diagnosing Baby blues Syndrome suffered by patients using the certainty factor method. The purpose of this research is to build an expert system for diagnosing the symptoms of Baby blues syndrome using the certainty factor method. Based on the results of the CF calculation, the highest score is the type of baby blues syndrome with a value of 0.9602 or 96.02%. From the results obtained, the system identified that the patient had a type of baby blues syndrome.

Keywords: expert system, baby blues, certainty factor

1. Introduction

Baby blues syndrome is a psychological disorder experienced by women after giving birth, such as feeling excessively upset and sad, and tired for no apparent reason. About 80% of women who have just given birth will experience Baby blues Syndrome, if this continues and is prolonged it will be very dangerous for the health of the mother and baby.

Bethesda Full Hospital is a type C private hospital and will become a referral center for the people of Sunggal sub-district and its surroundings. Bethesda Full Hospital as the hospital of choice for users of health services to deal with problems with various types of diseases experienced by patients. From the problems above, the hospital needs to have an additional system that can help make it easier for the medical team to speed up handlers in analyzing and diagnosing Baby blues Syndrome suffered by patients using the certainty factor method. Where the Certainty factor method is a method that defines a measure of certainty against facts or rules to describe an expert's belief in the problem at hand.

The system can later be used to solve problems that often occur in patients, where it is difficult for a patient to see a doctor to consult directly resulting in a delay in diagnosis which hinders optimal treatment due to difficulty of access, limited time, and costs that must be incurred to carry out a diagnosis.

2. Research Methods

2.1. Understanding Of Expert Systems

An expert system or expert system is usually referred to as a knowledge-based system, which is a computer application that is intended to assist decision making or problem solving in a specific field. This system works by using knowledge and analysis methods that have been defined in advance by experts in accordance with their areas of expertise. This system is called an expert system because its functions and roles are the same as an expert who must have knowledge and experience in solving a problem [1].

According to Rosnelly [2] an expert system is a computer system that is intended to emulate all aspects (emulates) the decision making ability of an expert. Expert systems make maximum use of specialized knowledge like an expert to solve problems. The advantages and disadvantages of expert systems can be explained as follows:

Below are some of the advantages that exist in expert systems, namely:

1. Increasing availability
2. Reducing costs (reduced costs)
3. Reducing danger
4. Permanent (permanence)

5. Multiple expertise (multiple expertise)
6. Improve reliability (increased reliability)
7. Explanation
8. Fast response (fast response)
9. Stable, unemotional, and provide a complete response at all times (steady, unemotional, and complete response at all times)
10. Smart tutor (intelligent tutor)
11. Intelligent database (intelligent database)

The shortcomings of the expert system are as follows [1]:

1. The cost is very expensive to make and maintain
2. Difficult to develop due to limited expertise and availability of experts.
3. Expert systems are not 100% True

2.2. Definition of Diagnosis

Diagnosis is a term adopted from the medical and medical fields as a process for determining the type of disease by looking at the symptoms that appear. In the world of education, the term "diagnosis" is a relatively new term.

Diagnosis is an analysis of abnormalities or misadjustments of the pattern of symptoms. Similar to the term in the world of medicine, diagnosis is an activity to determine the type of disease by examining its symptoms. Based on this, diagnosis is a process of examining things that are considered wrong or problematic.

2.3. Definition of Disease

Illness is a medical term that describes a disturbance in bodily functions that results in reduced capacity. Disease occurs when the balance in the body cannot be maintained. Illness occurs when a person is no longer in a normal state of health. According to Almatier [3], illness is an unpleasant condition that befalls a person, causing disruption to daily activities, both physical, spiritual and social activities.

2.4. Definition of Baby Blues Syndrome

Baby blues syndrome is an anxiety disorder and changes in the mood (emotions) of a pregnant and postpartum woman which usually occurs during pregnancy and 3 days postpartum to one year postpartum (after delivery). This psychological disorder is in the form of excessive feelings of sadness, feelings of worry, anxiety, anxiety and even affects the physical. Such as feeling tired even when not working, feeling hot and cold and having cold feet, heart palpitations, cold sweat feeling weak and experiencing sleep disturbances (insomnia) and mothers tend to hallucinate (imagine) [4].

According to Asih [5] in a book written by Lestari [4] postpartum bluesies are psychological changes that normally occur in a postpartum mother. But sometimes there are abnormal psychological changes. Meanwhile, postpartum blues or baby blues syndrome is a problem that occurs on the first post partum day and the symptoms peak on the 3rd to 5th day with a duration of several hours after giving birth to several days.

Several things are mentioned as the cause of Baby Blues Syndrome according to Lestari [4], including:

- a. Hormonal changes. After giving birth, there is a drastic decrease in estrogen and progesterone levels, and is also accompanied by a decrease in hormone levels produced by the thyroid gland which causes tiredness, decreased mood, and feelings of depression.
- b. Physically, the presence of a baby in the family causes a change in the rhythm of social life in the family, especially for mothers. Caring for your little one all day and night drains the mother's energy, causing less rest time, resulting in decreased resilience in dealing with problems.
- c. Psychological, anxiety about various things, such as the inability to take care of your little one, the inability to cope with various problems, feelings of insecurity due to changes in body shape and before pregnancy and lack of attention from the family, especially husbands, contribute to depression.
- d. Social, Changes in lifestyle with the role of a new mother need adaptation. A very strong sense of attachment to your little one and feeling shunned by the environment also plays a role in depression.

The cause of baby blues syndrome is thought to be due to hormonal changes in a woman's body after giving birth. During pregnancy, various hormones in the mother's body increase as the fetus grows. After going through the labor stage, the amount of production of various hormones such as estrogen, progesterone, and endorphins undergo changes that can affect the emotional state of the mother. Physical fatigue and pain after delivery, milk that has not come out so that the baby is fussy and the breasts swell, and lack of moral support can be another reason for the emergence of baby blues syndrome [4]

2.5. Definition of the Certainty Factor Method

Certainty Factor (CF) is one of the techniques used to overcome uncertainty in decision making. Certainty Factor can occur with various conditions. The concept of Certainty Factor is also often known as belief and disbelief. Believe is a belief, while disbelief is a lack of confidence. Certainty Factor is defined as the following equation [6], [7], [8], [9]:

Formula 1:

$$CF [h,e] = MB [h,e] - MD [h,e] \dots\dots\dots(1)$$

Information:

CF [h,e] = Certainty Factor / certainty factor in hypothesis h which is influenced by evidence e.

The magnitude of CF ranges from -1 to 1. A value of -1 indicates absolute distrust, while a value of 1 indicates absolute trust.

MB [h,e] = Measure of Believe, is the value of increasing the confidence in the hypothesis h d is influenced by the facts evidence e. (between 0 and 1).

MD [h,e] = Measure of Disbelief, is the value of increasing the distrust of hypothesis h influenced by the facts of evidence e (between 0 and 1).

H = Hypothesis

E = Evidence

To combine two or more rules, a knowledge-based system with multiple rules, each of which leads to the same conclusion but different uncertainty factors, then each rule can be presented as a piece of evidence supporting the joint conclusion. To calculate the CF (belief) of the conclusion, the following combining evidence is needed [6], [10], [11]:

Formula 2:

$$CF_{combine} = CF_{old} + CF_{gejala} * (1 - CF_{old}) \dots\dots\dots(2)$$

The types of Certainty Factor values for various kinds of uncertainty terms are described in Table 1.

Table 1: Type of Certainty Factor uncertainty value

Uncertainty terms	MB/MD
definitely not	-1
Almost Certainty Not	-0.8
probably not	-0.6
maybe not	-0.4
unknown	-0.2 s/d 0.2
maybe	0.4
probably	0.6
Almost certainty	0.8
definitely	1

3. Results And Discussion

The research method is carried out to look for something systematically by using the scientific method and applicable sources. In the process of this research, the results of the conceptualization will be poured into a research method that is closely related to the pattern of literature studies which will be made as shown in Figure 1.

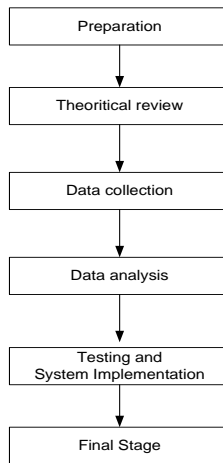


Fig. 1: Research Workflow

3.1. Flowcharts System

The flowchart of the expert system for diagnosing baby blues syndrome that will be made is by starting, the user logs in to the system, if the username and password are wrong then it will return to login, if the username and password are correct then the process will continue, Enter the main menu, the user fills in identity, then the user conducts a consultation, by selecting the type of symptom, then the system processes it by calculating the cf value, after that it combines the cf value for the calculation of the MB value, then calculates the CFcombine * 100% value then the results of the analysis of the baby blues disease diagnosis will appear, the process is complete. As seen in Figure 2 below.

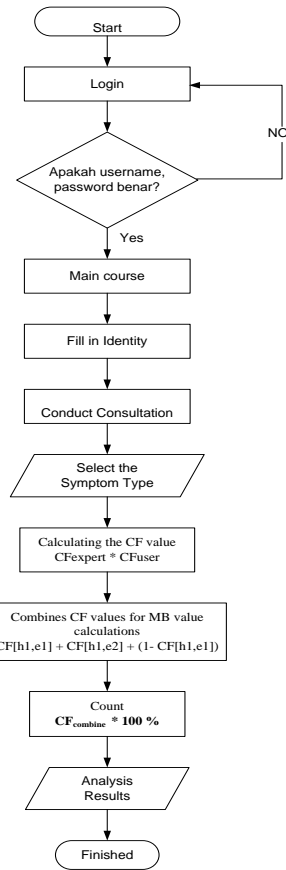


Fig. 2: System Flowchart

3.2. Use Case Diagrams

Use case diagram is an activity carried out by the system usually in response to requests from system users.

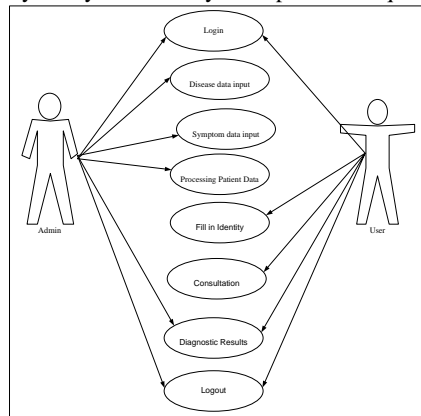


Fig. 3: use case diagrams

3.3. Application of the Certainty Factor Method

In this study, data on symptoms and disease of baby blues syndrome in patients were obtained from FULL BETHESDA RSU. The data needed to process expert system analysis to diagnose disease in patients with the certainty factor method as shown in Table 2.

Table 2: Diseases

Code	Disease Name
P1	Postpartum Syndrome
P2	Postpartum Distress Syndrome
P3	Psikosis Postpartum

Table 3: Symptoms

Code	Symptom Name
G1	Sleep disturbance, difficulty sleeping (insomnia) or sleeping too much

G2	No appetite
G3	Easily Offended/Sensitive
G4	Crying Suddenly For No Reason
G5	Difficulty in taking care of the baby.
G6	Can not wait
G7	Not confident
G8	Feeling confused, suspicious, and afraid
G9	Mood swing disorder
G10	Feel guilty
G11	Excessive crying
G12	Decreased concentration
G13	Stay away from family
G14	Hearing voices and seeing things that aren't there (hallucinations)
G15	Manic behavior (manic mood), for example talking or thinking too much and too fast, feeling too happy, and others
G16	Imagining or believing in things that are not true and illogical (delusions)
G17	Shows signs of depression, and withdraws from the environment
G18	Being very aggressive or violent
G19	Feeling paranoid
G20	Difficulty concentrating
G21	Plan to harm yourself or the baby
G22	Nervous
G23	Lack of energy, Weak, Lethargic

The relationship between symptoms and disease can be shown in Table 4 below.

Table 4: Relationship of Symptoms and Disease

No.	Gejala	P1	P2	P3
G1	Sleep disturbance, difficulty sleeping (insomnia) or sleeping too much	√	√	√
G2	No appetite	√	√	√
G3	Easily Offended/Sensitive	√	√	
G4	Crying Suddenly For No Reason	√	√	√
G5	Difficulty in taking care of the baby.	√	√	√
G6	Can not wait	√		
G7	Not confident	√		
G8	Feeling confused, suspicious, and afraid	√	√	
G9	Mood swing disorder		√	√
G10	Feel guilty		√	
G11	Excessive crying		√	
G12	Decreased concentration		√	
G13	Stay away from family		√	
G14	Hearing voices and seeing things that aren't there (hallucinations)			√
G15	Manic behavior (manic mood), for example talking or thinking too much and too fast, feeling too happy, and others			√
G16	Imagining or believing in things that are not true and illogical (delusions)			√
G17	Shows signs of depression, and withdraws from the environment			√
G18	Being very aggressive or violent			√
G19	Feeling paranoid			√
G20	Difficulty concentrating			√
G21	Plan to harm yourself or the baby			√
G22	Nervous			√
G23	Lack of energy, Weak, Lethargic			√

The following is a table of Certainty Factor certainty values:

Table 5: Expert Certainty Factor Value

Level	CF
Very confident	1.0
Certain	0.8
Most likely	0.6
Little Sure	0.4

The following is a table of Certainty Factor confidence values:

Table 6: Certainty Factor User Values

Level	CF
Very confident	1.0
Certain	0.8
Most likely	0.6

Little Sure	0.4
no	0

Sample case:

A patient named Nur, 25 years old, address at 4 tamanm downstream, consulted an expert system to find out whether he had baby blues syndrome or not. Following are the results of the patient consultation:

1. Sleep disturbance, difficulty sleeping (insomnia) or too much sleep = Little Confident
2. No Appetite = Don't Know
3. Easily Offended/Sensitive = A Little Confident
4. Crying Suddenly For No Reason = Don't Know
5. Difficulty in taking care of the baby = Sure
6. Impatient = Most likely
7. Not Confident = Most likely
8. Feeling confused, suspicious, and afraid = Most likely

The first step:

Consultation users are given a choice of answers, each of which is weighted as follows:

Table 7: Expert and User Trust Value

No.	Symptom	The type of disease	CF Pakar	CF User
1	Sleep disturbance, difficulty sleeping (insomnia) or sleeping too much.	<i>Postpartum syndrome</i>	0.6	0.4
	No appetite		0.4	0.2
	Easily Offended/Sensitive		0.4	0.4
	Crying Suddenly For No Reason		0.6	0.2
	Difficulty in taking care of the baby.		0.8	0.8
	Can not wait		0.6	0.6
	Not confident		0.6	0.6
	Feeling confused, suspicious, and afraid		0.8	0.6
2	Mood swing disorder	<i>postpartum distress syndrome</i>	1	0
	Feeling confused, suspicious, and afraid		0.8	0.6
	Crying Suddenly For No Reason		0.6	0.2
	Easily Offended/Sensitive		0.4	0.4
	Feel guilty.		0.2	0
	Excessive crying		0.6	0
	Decreased concentration.		0.6	0
	No appetite		0.4	0.2
	Sleep disturbance, difficulty sleeping (insomnia) or sleeping too much		0.6	0.4
	Stay away from family.		0.6	0
	Difficulty in taking care of the baby		0.8	0.8
3	Hearing voices and seeing things that aren't there (hallucinations)	<i>Psikosis Postpartum</i>	1	0
	Mood swing disorder		1	0
	Manic behavior (manic mood), for example talking or thinking too much and too fast, feeling too happy, and others		0.8	0
	Merasa bingung, curiga, dan takut		0.8	0.6
	Imagining or believing in things that are not true and illogical (delusions)		0.8	0
	Shows signs of depression, and withdraws from the environment		0.8	0
	Sleep disturbance, difficulty sleeping (insomnia) or sleeping too much.		0.6	0.4
	Being very aggressive or violent		0.8	0
	Feeling paranoid		0.8	0
	Difficulty concentrating		0.4	0
	Difficulty in taking care of the baby.		0.8	0.8
	Plan to harm yourself or the baby		0.8	0

Gelisah	0.4	0
Lack of energy, Weak, Lethargic	0.4	0
No appetite	0.4	0.2
Crying Suddenly For No Reason	0.6	0.2

From the symptoms described above, the system will process it using the Certainty Factor method. After the calculation process, it will conclude the type of disease in the patient. The first step is to calculate the CF value by claiming the CF expert with the CF user type of baby blues syndrome is:

$$\begin{aligned} CF[h1,e1] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0.4 \\ &= 0.24 \end{aligned}$$

$$\begin{aligned} CF[h1,e2] &= CF_{pakar} * CF_{user} \\ &= 0.4 * 0.2 \\ &= 0.08 \end{aligned}$$

$$\begin{aligned} CF[h1,e3] &= CF_{pakar} * CF_{user} \\ &= 0.4 * 0.4 \\ &= 0.16 \end{aligned}$$

$$\begin{aligned} CF[h1,e4] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0.2 \\ &= 0.12 \end{aligned}$$

$$\begin{aligned} CF[h1,e5] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0.4 \\ &= 0.24 \end{aligned}$$

$$\begin{aligned} CF[h1,e6] &= CF_{pakar} * CF_{user} \\ &= 0.8 * 0.8 \\ &= 0.64 \end{aligned}$$

$$\begin{aligned} CF[h1,e7] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0.6 \\ &= 0.36 \end{aligned}$$

$$\begin{aligned} CF[h1,e8] &= CF_{pakar} * CF_{user} \\ &= 0.8 * 0.6 \\ &= 0.48 \end{aligned}$$

Combines CF values for calculating MB values for the type of Postpartum syndrome disease. For CF[h1,e1] then do the calculation as follows:

$$\begin{aligned} CF_{combine} &= CF[h1,e1] + CF[h1,e2] * (1 - CF[h1,e1]) \\ &= 0.24 + 0.08 * (1 - 0.24) \end{aligned}$$

$$CF_{old} = 0.30$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h1,e3] * (1 - CF_{old}) \\ &= 0.30 + 0.16 * (1 - 0.30) \end{aligned}$$

$$CF_{old} = 0.412$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h1,e4] * (1 - CF_{old}) \\ &= 0.412 + 0.12 * (1 - 0.412) \end{aligned}$$

$$CF_{old} = 0.4825$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h1,e5] * (1 - CF_{old}) \\ &= 0.4825 + 0.64 * (1 - 0.4825) \end{aligned}$$

$$CF_{old} = 0.8137$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h1,e6] * (1 - CF_{old}) \\ &= 0.8137 + 0.36 * (1 - 0.8137) \end{aligned}$$

$$CF_{old} = 0.8807$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h1,e7] * (1 - CF_{old}) \\ &= 0.8807 + 0.36 * (1 - 0.8807) \end{aligned}$$

$$CF_{old} = 0.9236$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h1,e8] * (1 - CF_{old}) \\ &= 0.9236 + 0.48 * (1 - 0.9236) \end{aligned}$$

$$CF_{old} = 0.9602$$

$$\begin{aligned} \text{Persentase} &= CF_{combine} * 100 \% \\ &= 0.9602 * 100\% = 96.02\% \end{aligned}$$

Calculating the value of CF by claiming CFexpert with CFUser type of disease postpartum distress syndrome to be:

$$\begin{aligned} CF[h2,e1] &= CF_{pakar} * CF_{user} \\ &= 1 * 0 \\ &= 0 \end{aligned}$$

$$\begin{aligned} CF[h2,e2] &= CF_{pakar} * CF_{user} \\ &= 0.8 * 0.6 \\ &= 0.48 \end{aligned}$$

$$\begin{aligned} CF[h2,e3] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0.2 \\ &= 0.12 \end{aligned}$$

$$\begin{aligned} CF[h2,e4] &= CF_{pakar} * CF_{user} \\ &= 0.4 * 0.4 \\ &= 0.16 \end{aligned}$$

$$\begin{aligned} CF[h2,e5] &= CF_{pakar} * CF_{user} \\ &= 0.2 * 0 \\ &= 0 \end{aligned}$$

$$\begin{aligned} CF[h2,e6] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0 \\ &= 0 \end{aligned}$$

$$\begin{aligned} CF[h2,e7] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0 = 0 \end{aligned}$$

$$\begin{aligned} CF[h2,e8] &= CF_{pakar} * CF_{user} \\ &= 0.4 * 0.2 \\ &= 0.8 \end{aligned}$$

$$\begin{aligned} CF[h2,e9] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0.4 \\ &= 0.24 \end{aligned}$$

$$\begin{aligned} CF[h2,e10] &= CF_{pakar} * CF_{user} \\ &= 0.6 * 0 \\ &= 0 \end{aligned}$$

$$\begin{aligned} CF[h2,e11] &= CF_{pakar} * CF_{user} \\ &= 0.8 * 0.8 \\ &= 0.64 \end{aligned}$$

Combining the CF value for the calculation of the MB value for the type of postpartum distress syndrome disease. For CF[h2,e1] then do the calculation as follows:

$$\begin{aligned} CF_{combine} &= CF[h2,e1] + CF[h2,e2] + (1 - CF[h2,e1]) \\ &= 0 + 0.48 * (1-0) \end{aligned}$$

$$CF_{old} = 0.48$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e3] * (1 - CF_{old}) \\ &= 0.48 + 0.12 * (1-0.48) \end{aligned}$$

$$CF_{old} = 0.5424$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e4] * (1 - CF_{old}) \\ &= 0.5424 + 0.16 * (1-0.5424) \end{aligned}$$

$$CF_{old} = 0.6156$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e5] * (1 - CF_{old}) \\ &= 0.6156 + 0 * (1-0.6156) \end{aligned}$$

$$CF_{old} = 0.6156$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e6] * (1 - CF_{old}) \\ &= 0.6156 + 0 * (1-0.6156) \end{aligned}$$

$$CF_{old} = 0.6156$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e7] * (1 - CF_{old}) \\ &= 0.6156 + 0 * (1-0.6156) \end{aligned}$$

$$CF_{old} = 0.6156$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e8] * (1 - CF_{old}) \\ &= 0.6156 + 0.08 * (1-0.6156) \end{aligned}$$

$$CF_{old} = 0.6463$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e9] * (1 - CF_{old}) \\ &= 0.6463 + 0.24 * (1-0.6463) \end{aligned}$$

$$CF_{old} = 0.7311$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e10] * (1 - CF_{old}) \\ &= 0.7311 + 0 * (1-0.7311) \end{aligned}$$

$$CF_{old} = 0.7311$$

$$\begin{aligned} CF_{combine} &= CF_{old} + CF[h2,e10] * (1 - CF_{old}) \\ &= 0.7311 + 0.64 * (1-0.7311) \end{aligned}$$

$$CF_{old} = 0.9032$$

$$\begin{aligned} \text{Persentase} &= CF_{combine} * 100 \% \\ &= 0.9032 * 100\% \\ &= 90.22\% \end{aligned}$$

Calculating the value of CF by claiming CFexpert with CFUser types of postpartum psychosis disease to be:

$$\begin{aligned} CF[h3,e1] &= CF_{pakar} * CF_{user} \\ &= 1 * 0 \\ &= 0 \end{aligned}$$

$$\begin{aligned} CF[h3,e2] &= CF_{pakar} * CF_{user} \\ &= 0.8 * 0.6 \\ &= 0.48 \end{aligned}$$

$$\begin{aligned} CF[h3,e3] &= CF_{pakar} * CF_{user} \\ &= 0.8 * 0 \\ &= 0 \end{aligned}$$

$$CF[h3,e4] = CF_{pakar} * CF_{user}$$

$$\begin{aligned}
&= 0.8 * 0.6 \\
&= 0.48 \\
CF[h3,e5] &= CF_{pakar} * CF_{user} \\
&= 0.8 * 0 \\
&= 0 \\
CF[h3,e6] &= CF_{pakar} * CF_{user} \\
&= 0.8 * 0 \\
&= 0 \\
CF[h3,e7] &= CF_{pakar} * CF_{user} \\
&= 0.6 * 0.4 \\
&= 0.24 \\
CF[h3,e8] &= CF_{pakar} * CF_{user} \\
&= 0.8 * 0 \\
&= 0.8 \\
CF[h3,e9] &= CF_{pakar} * CF_{user} \\
&= 0.8 * 0 \\
&= 0 \\
CF[h3,e10] &= CF_{pakar} * CF_{user} \\
&= 0.4 * 0 \\
&= 0 \\
CF[h3,e11] &= CF_{pakar} * CF_{user} \\
&= 0.8 * 0.8 \\
&= 0.64 \\
CF[h3,e12] &= CF_{pakar} * CF_{user} \\
&= 0.8 * 0 \\
&= 0 \\
CF[h3,e13] &= CF_{pakar} * CF_{user} \\
&= 0.4 * 0 \\
&= 0 \\
CF[h3,e14] &= CF_{pakar} * CF_{user} \\
&= 0.4 * 0 \\
&= 0 \\
CF[h3,e15] &= CF_{pakar} * CF_{user} \\
&= 0.4 * 0.2 \\
&= 0.08 \\
CF[h3,e16] &= CF_{pakar} * CF_{user} \\
&= 0.6 * 0.2 \\
&= 0.12
\end{aligned}$$

Combining the CF value for the calculation of the MB value in the type of postpartum psychosis. For CF[h3,e1] then do the calculation as follows:

$$\begin{aligned}
CF_{combine} &= CF[h3,e1] + CF[h3,e2] + (1 - CF[h3,e1]) \\
&= 0 + 0 * (1-0) \\
CF_{old} &= 0 \\
CF_{combine} &= CF_{old} + CF[h3,e3] * (1 - CF_{old}) \\
&= 0 + 0 * (1-0) \\
CF_{old} &= 0 \\
CF_{combine} &= CF_{old} + CF[h3,e4] * (1 - CF_{old}) \\
&= 0 + 0.48 * (1-0) \\
CF_{old} &= 0.48 \\
CF_{combine} &= CF_{old} + CF[h3,e5] * (1 - CF_{old}) \\
&= 0.48 + 0 * (1-0.48) \\
CF_{old} &= 0.48 \\
CF_{combine} &= CF_{old} + CF[h3,e6] * (1 - CF_{old}) \\
&= 0.48 + 0 * (1-0.48) \\
CF_{old} &= 0.48 \\
CF_{combine} &= CF_{old} + CF[h3,e7] * (1 - CF_{old}) \\
&= 0.48 + 0.24 * (1-0.48) \\
CF_{old} &= 0.604 \\
CF_{combine} &= CF_{old} + CF[h3,e8] * (1 - CF_{old}) \\
&= 0.604 + 0 * (1-0.604) \\
CF_{old} &= 0.604 \\
CF_{combine} &= CF_{old} + CF[h3,e9] * (1 - CF_{old}) \\
&= 0.604 + 0 * (1-0.604) \\
CF_{old} &= 0.604 \\
CF_{combine} &= CF_{old} + CF[h3,e10] * (1 - CF_{old}) \\
&= 0.604 + 0 * (1-0.604) \\
CF_{old} &= 0.604 \\
CF_{combine} &= CF_{old} + CF[h3,e11] * (1 - CF_{old}) \\
&= 0.604 + 0.64 * (1-0.604)
\end{aligned}$$

$$\begin{aligned}
CF_{old} &= 0.857 \\
CF_{combine} &= CF_{old} + CF[h3,e12] * (1 - CF_{old}) \\
&= 0.857 + 0 * (1-0.857) \\
CF_{old} &= 0.857 \\
CF_{combine} &= CF_{old} + CF[h3,e13] * (1 - CF_{old}) \\
&= 0.857 + 0 * (1-0.857) \\
CF_{old} &= 0.857 \\
CF_{combine} &= CF_{old} + CF[h3,e14] * (1 - CF_{old}) \\
&= 0.857 + 0 * (1-0.857) \\
CF_{old} &= 0.857 \\
CF_{combine} &= CF_{old} + CF[h3,e15] * (1 - CF_{old}) \\
&= 0.857 + 0.08 * (1-0.857) \\
CF_{old} &= 0.868 \\
CF_{combine} &= CF_{old} + CF[h3,e16] * (1 - CF_{old}) \\
&= 0.868 + 0.12 * (1-0.868) \\
CF_{old} &= 0.8838 \\
Persentase &= CF_{combine} * 100 \% \\
&= 0.8838 * 100\% \\
&= 88.38\%
\end{aligned}$$

Based on the results of the CF calculation, the highest score is the type of baby blues syndrome with a value of 0.9602 or 96.02%. From the results obtained, the system identified that the patient had a type of baby blues syndrome.

4. Conclusion

Based on the results of the CF calculation, the highest score is the type of baby blues syndrome with a value of 0.9602 or 96.02%. From the results obtained, the system identified that the patient had a type of baby blues syndrome.

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