



Gastric Acid Diagnosing Expert System Using Certainty Factor Method

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ABSTRACT

Ulcer disease or stomach acid is a psychomatic disease (disease of the mind and body) or it could be an infectious disease caused by bacteria that cause infection in the stomach. Acid reflux can also occur due to irregular eating patterns. At least sufferers are aware about maintaining their diet and choosing food to reduce symptoms of stomach acid. In this case the author tries to create an existing system by proposing an expert system system to diagnose gastric acid disease using the certainty factor method. The certainty factor method is a method to prove whether a fact is certain or uncertain. The main goal in designing this system is to determine the symptoms of gastric acid and how to treat it.

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1. Introduction

An expert system or Expert System, also known as a Knowledge Base System, is a computer application intended to assist decision making or problem solving in a specific field. This system works by using knowledge and analytical methods that have been defined in advance by experts in accordance with their field of expertise. This system is called an expert because its function and role is the same as an expert who must have knowledge and experience in solving a problem.

The system usually functions as an important key that will help a decision support system or executive support system (B. Herawan Hayadi; 2016: 1). In conventional science, ulcers are classified as diseases that cannot be cured completely. Ulcer disease or gastric ulcers can be a psychosomatic disease (disease of the mind and body) or it can also be an infectious disease caused by gram-negative bacteria *Helicobacter pylori*, side effects of drugs and wrong eating patterns (Danton Awan; 2016: 3). (certainty factor) together with the manufacture of the mycin expert system. The mycin development team noted that doctors often analyze the available information with phrases such as: probably, most likely, almost certainly.

Stomach Acid Disease In conventional science, ulcers are classified as diseases that cannot be completely cured. Ulcer disease or gastric ulcer is a psychosomatic disease (disease of the mind and body) or it could be an infectious disease caused by the gram-negative bacteria *Helicobacter pylori*, side effects of drugs and the wrong diet (Danton Awan; 2016: 3). The reason the author uses the

certainty factor method is because this theory or method can accommodate the uncertainty of an expert's thinking (inexact reasoning) and the certainty factor can describe the level of expert confidence in the problems at hand, such as the explanation of the certainty factor above.

The aims and objectives of this research are: To create an expert system that can help medical personnel to diagnose acid reflux disease. Creating an expert system that is easy to use for medical personnel with the certainty factor method. Benefits The benefits of this research are: Transferring the expertise of experts into an expert system which can later be used in diagnosing stomach acid disease. Make it easier for medical personnel to help patients consult in diagnosing acid reflux disease. The certainty factor was introduced by Shortliffe Buchanan in making MYCIN in 1975 to accommodate the inexact reasoning of an expert. This theory developed simultaneously with the creation of the MYCIN expert system. The MYCIN development team noted that doctors often analyze the available information with phrases such as: probably, most likely, almost certainly. To accommodate this, the MYCIN team uses a certainty factor (CF) to describe the level of expert confidence in the current problem.

2. Method

The author conducted research using the case study method, namely examining and observing directly about the diagnosis of gastric acid disease which was used as a research place to obtain data and information - information as the main ingredient in making thesis reports, the source of the data is secondary data. Secondary data is data obtained from reference books, scientific works and other sources related to the object of research. The following are several data collection techniques, including: Library Research (Library Research)

Literature research is research conducted to obtain secondary data, namely by reading, studying and understanding books, lecture notes and other sources related to the object of research discussed to be used as the basis for compiling this thesis report. The books and journals studied by the author are decision support systems, use of weight product methods, virtual studio 2010 applications and SQL Server 2008 data bases. Field Research Field research is direct research on the state of the company by recording and observing activities or activities carried out by companies related to the object of research discussed in this final paper, so that the authors can obtain the actual data.

3. Results and Discussion

The following describes the display of results from the Gastric Acid Disease Diagnostic Expert System Using the Certainty Factor Method, which can be seen as follows:

a. Login Form Display

Login system activities carried out by experts can be explained with the state steps shown in Figure 1 below:

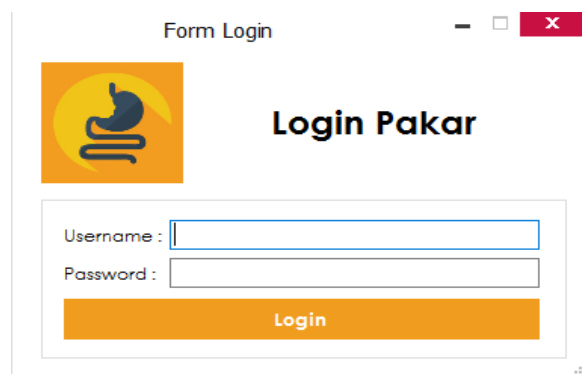
The image shows a screenshot of a web application window titled "Form Login". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. On the left side, there is a logo consisting of a stylized stomach and intestines inside a yellow circle. To the right of the logo, the text "Login Pakar" is displayed in a bold, black font. Below the logo and title, there is a white rectangular form containing two input fields: "Username :" and "Password :". Each field has a blue border and a small cursor. At the bottom of the form, there is a prominent orange button with the word "Login" written in white text.

Figure 1. Login Form Display

b. User Consultation Form Display

The following is the display of the user consultation form which can be explained with the state steps shown in Figure 2 below:

Figure 2.User Consultation Form Display

c. Expert Data Form Display

The following is a display on expert data processing which can be explained with the state steps shown in Figure 3 below:

ID Pakar	Nama	Username
PG001	Dimas Prasetyo	dimas

Figure 3. Expert Data Form Display

d. Display of Disease Data Form

The following is a display of disease data processing that can be explained with the state steps shown in Figure 4 below:

The screenshot shows a window titled "Form Penyakit". On the left is a vertical toolbar with icons for adding (+), saving (✓), editing (✎), and deleting (✕). The form contains four input fields: "ID Penyakit", "Nama", "Keterangan", and "Pengobatan". Below these fields is a table with the following data:

ID Penyakit	Nama	Keterangan	Pengobatan
PE001	Asam Lambung Akut	-	-
PE002	Asam Lambung Kronis	-	-

Figure 4. Display of Disease Data Form

e. Symptom Data Form Display

The following is a display of symptom data processing which can be explained with the state steps shown in Figure 5 below:

The screenshot shows a window titled "Form Gejala". On the left is a vertical toolbar with icons for adding (+), saving (✓), editing (✎), and deleting (✕). The form contains four input fields: "ID Gejala", "Nama", "MB" (with a spinner set to 0.00), and "MD" (with a spinner set to 0.00). Below these fields is a table with the following data:

ID Gejala	Nama	MB	MD
GE001	Mual	0,50	0,15
GE002	Sering Sendawa	0,35	0,05
GE003	Sakit Perut Bagian At...	0,25	0,00
GE004	Tubuh Lemas	0,40	0,20
GE005	Kembung	0,55	0,10
GE006	BAB Berdarah	0,60	0,15
GE007	Muntah	0,20	0,05
GE008	Muntah Darah	0,35	0,00
GE009	Nafsu Makan Menurun	0,15	0,00
GE010	Mudah Lelah	0,20	0,05

Figure 5. Symptom Data Form Display

f. Rule Base Form Display

The following is a display of the rule base data processing that can be explained with the state steps shown in Figure 6 below:

ID Aturan	Penyakit
BA001	Asam Lambung Akut
BA002	Asam Lambung Kronis

Figure 6. Rule Base Form Display

g. Consultation Result Report Form Display

The following is a display to view the report on the results of the consultation, which can be explained with the state steps shown in Figure 7 below:

Laporan Hasil Konsultasi	
ID Konsultasi	KD00000004
Tanggal	17/09/2016 14:32:57
Nama	anda
J. Kelamin	Laki-Laki
Alamat	andard
Gejala	BAB Berdarah, Kembung, Mual.
Hasil	Asam Lambung Akut 64.2
Keterangan	-

Figure 7. Consultation Result Report Form Display

4. Conclusion

From the results of the author's research, several conclusions can be drawn, including: The expert system for diagnosing gastric acid disease can determine the results of the consultation accurately because it has applied the certainty factor method. Can make consultation information more effective and efficient so as to improve health services to be more effective. The programming language used to create this application is Visual Basic and the database used is SQL Server. Suggestions Based on the results of the research and the conclusions described above, there are several suggestions that can be given. The suggestions that can be put forward are as follows: Always back up data to avoid the possibility of losing important data caused by damage to the hardware.

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