

# 15. Diagnosis of Toddler Digestion Disorder using

*by Universitas Potensi Utama*

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**Submission date:** 25-Feb-2023 04:44PM (UTC+0700)

**Submission ID:** 2022695817

**File name:** 15.\_Diagnosis\_of\_Toddler\_Digestion\_Disorder\_using.pdf (382.09K)

**Word count:** 1176

**Character count:** 6644

# Diagnosis of Toddler Digestion Disorder using Forward Chaining Method

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**Abstract**—Expert system refers to a system that is trying to adopt human knowledge into a computer. Expert system contains certain knowledge so that everyone can use it to solve specific problems. The expert system by utilizing the forward chaining method starts from selecting the initial symptoms to find information in accordance with the rules of the rule. This study aimed to build an expert system application to diagnose gastrointestinal disorders of toddlers using forward chaining method. Application is designed using UML and built with Java programming language and MySQL as the database. The results of this study are implemented at Clinic Pratama Hesti, Bengkulu.

**Keywords**—Expert System; Toddler Digestive Disorders; Forward Chaining

## I. INTRODUCTION

Food is a basic need for every human being. There are many variants of the food supplied for consumption. However, most are not aware of the composition of it such that it can be bad for the organs and the digestive system, especially for Toddlers. Even sometimes food seems indiscriminate.

Lack of parent knowledge in digestive health issues sometime makes toddler consume foods that do not fit to the needs of the digestive system. As well as the lack of appropriate food make toddler get in to disorder of digestion,

This research was conducted at the Clinic Pratama Hesti by guidance of dr.Pajar, SpA. This Clinic is a place of public health services. By implementing the Expert System in Pre-Diagnostic will simplify the diagnosis and minimize the time required by the doctor.

## II. BASIC THEORY

### 2<sup>nd</sup> A. Expert system

In general, expert systems is a system that is trying to adopt human knowledge into a computer, so that the computer can help to solve problems usually done by experts. With this expert system, the application operator can solve a particularly complex issue which is usually solved by an expert.

### B. Digestive System

The digestive system is a system to receive food, digest it for energy and nutrients. In general, the digestive system can be described as a structure that is elongated and winding, where the food is inserted through the mouth and get the rest of substances that are not needed by the body through feces.

### C. Digestive System Disorders

Disorders of the digestive system may occur if any one or more of the digestive process is not going well. The toddler digestive system is very different from adults. Toddlers are still very prone to digestive problems. Actually, the digestive system of toddlers and adults are the same, however the toddlers are still not optimal in maximizing the function of each organ in the digestive system.

### D. Forward Chaining

Forward chaining is a tracing process that begins by displaying a collection of data or facts that convincingly towards the final conclusion. So the forward chaining method

starting from the input information (if) first and then to conclusion (then) or modeled as following:

IF (Input Information) THEN (conclusion)

The input information can be data, evidence, findings or knowledge, while the conclusion may be of interest, explanation, or diagnosis.

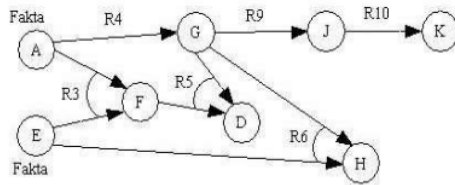


Fig 1. Process Reasoning Forward Chaining

### III. DATA COLLECTION

#### A. Data Symptoms

TABLE I  
DATA SYMPTOMS

Code	Symptom
GBH1	feel pain in the stomach
GBH2	feces in liquid form
GBH3	defecate frequent
GBH4	vomit
GBH5	sluggish and limp
GBH6	fever
GBH7	fussy and anxious
GBH8	always thirsty and drink a lot
GBH9	mouth and eyes more dry than usual
GBH10	urinate rare
GBH11	urine is much darker
GBH12	slow return of pinching the skin to the stomach
GBH13	after 2 days, feces become more liquid contain blood and mucus
GBH14	un-smooth defecate
GBH15	hard feces
GBH16	difficult discharge of feces
GBH17	left lower abdomen quite hard
GBH18	less appetite
GBH19	pain when defecate
GBH20	thin body but distended
GBH21	hard to gain body weight
GBH22	itch around anus
GBH23	cough
GBH24	bloating
GBH25	nauseous
GBH26	loss weight

#### B. Data Disease

TABLE II  
DATA DISEASE

Code	The Type Of Disease
BH1	diarrhea
BH2	diarrhea with dehydration
BH3	dysentery
BH4	constipation
BH5	worm infestation
BH6	stomach disorder

### IV. DESIGN

Use case diagrams is made to describe the functional model of a system that uses an actor and a use case. Below is a use case diagram for an expert system to diagnose digestion disorders of Toddlers.

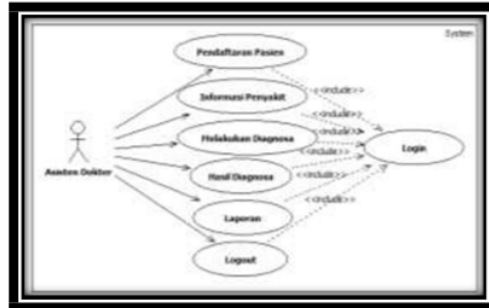


Fig 2. Use Case Diagram

### V. OUTCOME AND DISCUSSION

Outcome of the research is an expert system implementation which is designed and developed at the Clinic Primary Hesti Bengkulu by using the Java programming language and mySQL as the database.



Fig 3. Outcome of the research

### VI. CONCLUSION

The conclusion of this system development as follows :

- The Forward Chaining method determines the disease symptoms of toddler indigestion to predict the disease. This system was developed using the platform of Java and MySQL database.

- Applying expert system will simplify the doctor jobs, and to achieve time-efficiency in the disease diagnostic.

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