I. INTRODUCTION

In the industrial era 4.0 as it is now, the internet is very important and needed in various aspects, especially in the health sector, because the need for accurate and fast information will improve the quality of service to the community. Hospitals, Polyclinics, Public Health Centers are places that are the fastest to contract a disease, so they need a system to reduce direct physical contact with patients. The Coronavirus has caused an increase in the quantity of hospitalized patients, while the quantity of health workers is very limited. Inpatients are entities that need special supervision because almost all inpatients have to have an infusion. Intravenous infusion fluids (intravenous fluids) is an activity of giving fluids into the body, through a needle that is placed in a vein for fluids and body substances [5]. With the large number of patients and the limited number of health workers, there is a high possibility of human error for health workers. For example, forgetting to change the infusion regularly because it doesn't have an integrated system with the infusion itself.

According to our observations, the Kutoarjo Health Center still uses conventional methods in its inpatient services. Monitoring the patient's infusion fluid level by going around one by one to the inpatient room. This is very ineffective, sometimes this method causes problems when the state of the liquid volume in the infusion bag has run out but no health personnel has checked and this state is very dangerous for the patient. The infusion system uses pressure and gravity, if the fluid in the infusion bag runs out, the blood will rise to the infusion tube. Blood that rises to the infusion tube can become a clot and if it enters a blood vessel it will clog like an air embolism. Blockages in these blood vessels can cause shortness of breath, chest pain, muscle pain, and even stroke. Therefore, the Kutoarjo Health Center needs a system that can determine the level of infusion fluid per second as well as provide notifications if the level of infusion fluid is at a minimum. Internet of Things (IoT) is the solution to these problems.

In writing this research, it is necessary to support the results of previous research related to the background of the proposal writing. The references used as a reference are as follows: Research on the intravenous infusion monitoring system has been carried out by Rini Maharani (2019) with the title "Monitoring and Warning System on Patient Intravenous Fluid Volume (Infusion) Using Website-Based Arduino"[1]. This study was designed to use several components, namely Arduino Uno as a data controller and processor, Ethernet Shield as a supporting component so that Arduino can connect to the internet, load cell sensor to determine the total volume of infusion fluid in the infusion bag, LED sensor and photodiode to determine the speed of liquid drops. infusion and Website for system display as communication. In her research, Rini Maharani succeeded in building a monitoring and warning system on the volume of patient infusion fluids using a website-based Arduino Uno, but the installation process had difficulties due to using too many UTP cables, so it was recommended for further research to use ESP 8266.

Dani Sasmoko (2017) conducted a research entitled "Implementation of the Internet of Things (IoT) on Infusion Monitoring Using ESP 8266 and the Web for Data Sharing"[7]. Consists of several components, namely the Atmega 8535 microcontroller as the controller of the entire system, the load cell sensor as a weight sensor for the amount of infusion fluid whose results will enter the Atmega 8535, the ESP 8266 module functions to continue the microcontroller process and send data on the weight of infusion fluids via WiFi signals to the MySQL database. . In this study, there were 3 conditions for the amount of intravenous fluids, namely Normal, Warning, and Empty. Normal conditions if the infusion fluid is more than 50 milliliters, the Warning condition is less than 50 milliliters and the Empty condition if there is no infusion fluid installed. The status of the condition will be sent to the database and the computer screen will display the status, but in this study we have not used an alarm or buzzer as a notification. For further research, it is recommended to use notifications in the form of an alarm or buzzer

Research from Taufik Akbar and Indra Gunawan (2020) entitled "Prototype of IoT (Internet of Things)-Based Infusion Monitoring System"[8]. Using several components, namely a load cell sensor which will read the value of the infusion in the form of an analog signal then convert the analog signal into a digital signal through the HX711 module, the NodeMCU will receive and process digital signals from the load cell sensor and then send it to the ESP 8266 module to be used as server and web data. The server will provide information in the form of a display on the computer screen. This research uses the Thingspeak.com web server and the Blynk application by adding features in the form of a red indicator light and a buzzer loudspeaker. Researchers have difficulty in assembling the sensor control because the load cell sensor is very sensitive to movement, so for further research it is necessary to add safety on the side of the load cell sensor so that the load cell sensor does not read the movements made by the patient as the weight of the infusion bottle.

We have built and analyzed the usability of a web-based infusion liquid volume observing and notification system and alarms. Using the ESP8266 module which is connected to a load cell sensor to detect the volume of infusion liquid and install it on the infusion pole. The ESP8266 sends sensor data over the internet to the database server. The web retrieves sensor data from the database server and displays it on the laptop/PC screen. If the infusion liquid volume is below 50 mL, the alarm in the observing room will sound and the web displays the status “Dangerous” and displays the status “Safe” if the infusion liquid volume is above 50 mL. To analyze the usefulness of the infusion liquid volume observing system, we used the System Usability Scale method. Is a questionnaire method to measure the usability of a product or service. John Broke established this method in 1986 initially to test office electronic systems. A system is said to be successful/good if it has an SUS value greater than 68. In this study we use 4 points of view to interpret the SUS results, namely Acceptable, Adjective, Grades, and Net Promoter Score.

After conducting research, the infusion liquid volume observing system got an SUS value of 54.3 which indicates that the usability of this system is still low. If interpreted, the infusion fluid level monitoring system occupies the "D" index on the Grades side, the Marginal position on the Acceptable side, the "OK" position on the Adjective side, and Detractor on the Net Promoter Score side. Although the infusion liquid volume observing system has a low value, so far the infusion liquid volume observing system has been running properly. The low value of SUS is because this system is a new innovation that previously the puskesmas had never implemented it, so users needed to adapt first