

Chapter 10

Design and Development of Internet of Things– Based Wireless Health Monitoring System

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ABSTRACT

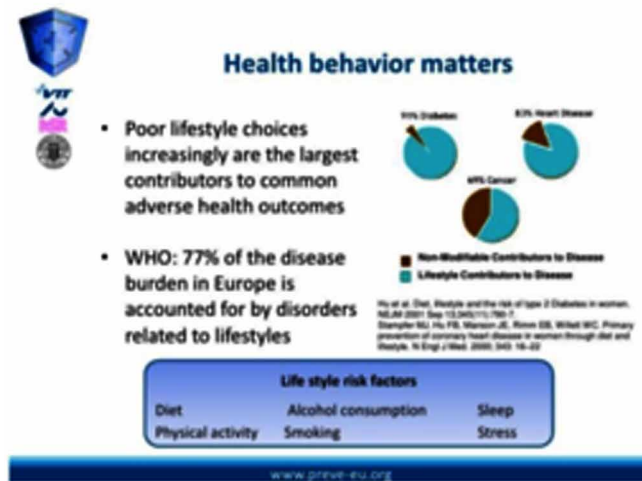
In this world with exponentially increasing fitness risks, the authors are proposing an Internet of Things (IoT) based device named Wireless Health Monitoring System (WHMS), to put patients' thinking at ease. We are dwelling in a world which is no longer viable for a doctor to keep a watch over a patient's indispensable parameters all the time. This device is helpful for aged people staying alone at home, people dwelling on hills, pregnant females anywhere, and for busy people who cannot often contact a doctor. A health practitioner, some distance away from the patient, needs to understand his heart rate and body temperature of the physique to begin preliminary treatment. Keeping this as a prelude landmark, the authors are proposing an embedded gadget which can measure the rate of heart beat and body temperature, and keep the statistics on the cloud server for the doctor to determine the next course of action.

INTRODUCTION

As indicated by the records outfitted by World Health Organization (WHO), around 32% individuals over 18 years old have passed away, throughout the world, and hidden causes are initiated because of cardiovascular maladies, fundamentally an infirmity of heart and veins. ("Cardio Vascular Disease", n.d.) (World Health Organization, n.d.) (Lancet, 2013) Turmoil of the heart and veins incorporates Coronary Heart Disease (CHD), Rheumatic Heart Disease (RHD), expanded circulatory strain (Hypertension), cerebrovascular infection (Stroke), fringe supply route illness, inherent heart affliction and coronary heart disappointment. ("Cardio Vascular Disease", n.d.) Ongoing overviews likewise reason that India will take not long to have the most extreme instances of coronary heart issue on the planet. Various

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Figure 1. Consequences of poor lifestyle (“Survey on impact of lifestyle on our health”, n.d.)



kinds of Cardio Vascular Diseases (CVD) need constant observation of basic body parameters, which may furthermore require protracted stay remains lengthy.

Also, different specialists have demonstrated that low scopes of physical exercises lead to a wide assortment of ailment, for example, abnormal amounts of systolic and diastolic circulatory strain, broadened rates of overweight and stoutness and a lot more to list. Figure 1 expresses the outcomes of sedentary way of life on an individual’s wellbeing in agreement to a review led through WHO.

As per WHO studies directed in 2017 in India, there is exclusively one approved allopathic doctor for each 10,189 individuals (“Cardio Vascular Disease”, n.d.). This demonstrates a horrifying situation of absence of enough therapeutic specialists and inability to go to every one of the sufferers in the need of hour. Therefore, it is never again possible for a medicinal specialist to take a gander at a patient’s heart beat and body temperature for each moment constantly. Once more, a wellbeing specialist far from the patient need to comprehend coronary heart rate and body temperature for fundamental treatment.

In this section, authors present WHMS, a wearable device that will reliably show the wellness of patient. This wearable gadget significantly comprises of temperature sensor and coronary heart rate sensor. WHMS will gauge the coronary pulse and body temperature and aggregate the records fit as a fiddle of bio cautions from sensors and send it to wellbeing specialists control server for capacity and preparing the use of remote correspondence. This information will be accessible to the restorative specialists on server from any region utilizing IoT utility (Gogate, 2018).

Each influenced individual utilizing this gadget will have a unique API key through which all his clinical parameters will be refreshed over constant period of time consequently. Specialist can get directly access information utilizing indistinguishable unique API key, whenever required. Along these lines, doctors know about patient’s wellbeing stipulations, excepting the need of being physically present constantly.

A model of WHMS has been made utilizing three-dimensional engineering of Wireless Body Area Network (WBAN). At Level 1, Arduino Nano board dependent on the ATMEGA328P microcontroller, is utilized to gain measurements from sensors. At Level 2, microcontroller will send this data to server for the utilization of ESP8266 Wi-Fi remote transmission and at Level 3, web availability is utilized to exchange data to distant for medicinal applications utilizing IoT utility based ThingSpeak server.

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