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Creating Social Awareness about Gonorrhoea through Mobile Application

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Abstract: Since, Mobile Phones and hand-held devices such as iPad, tablets, etc. are used on large scale globally, there is tremendous growth of people using mobile applications. We suggest using mobile applications to create awareness and teach about sensitive issues like STDs, Cancer, etc. In developing countries these issues are not taken seriously due to cultural taboos, social awkwardness, gender inequality and social barriers. Through this paper we provide a simple and effective solution to this problem. As these applications can take care of privacy, there won't exist any hesitation to use as compared to talking to real person. We are providing an interactive mobile application which delivers correct knowledge to remove the misconception, provides preliminary diagnosis, provides appropriate guidance and several other features.

Key words: STD: Sexually Transmitted Disease, STI: Sexually Transmitted Infection.

I. INTRODUCTION

STIs are a global cause of infertility, acute illness, long term disability and even death with serious psychological and medical consequences to millions of men, women and infants. There are more than 30 bacterial, viral, parasitic pathogens that can be transmitted sexually [1][7].

Gonorrhoea is one of the most common STD. It is also referred to as “the clap”. The disease is caused by bacteria *Neisseria Gonorrhoeae* which causes inflammation of glands. The bacteria generally grows and multiplies in the warm moist areas of the body. It primarily affects urethra in men and cervix in women. Gonorrhoea of rectum is also possible[8].

Gonorrhoea has progressively developed **resistance to the antibiotic drugs** prescribed to treat it. An estimated 88 million cases of Gonorrhoea, out of 448 million cases of all curable STIs each year. Teens are at more risk of getting contact with STD. One of the primary defense in the fight against STIs is **awareness**. With right information, individuals can make informed choices and protect themselves and their partner in a better way.[1][2]

In developing countries like India it is difficult to provide education about STD among rural population and make them understand reasons behind it and provide solutions to them.

There is a wide variety of applications in help and fitness category. Applications range from interactive games to simple health parameter loggers which saves data regarding weight, sugar level, blood pressure, etc. Some apps which are designed to help users are usually for health professionals. Therefore, providing information in health related terminologies to a layman

makes it hard for him/her to understand and there is no option to check his/her understanding about the topic. Users can't connect to other people undergoing similar diseases maintaining anonymity. There is no provision to connect with qualified doctors and get expert advice specially socially and economically backward people who are generally misguided by unreliable sources.[4][6][17]

Our application will be designed and built solving issues aforementioned.

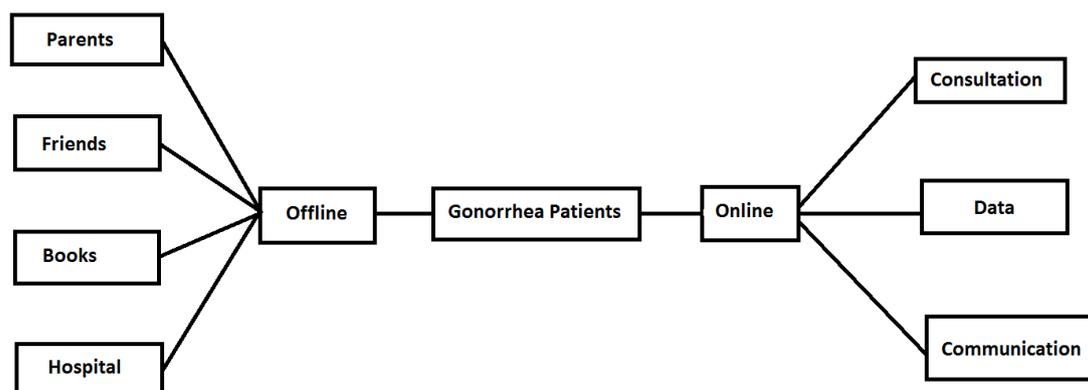
II. LITERATURE SURVEY

With the globalization of the world, transmittable diseases don't stay confined to a specific location and are easily spread all over the world. Cases of sexually transmitted diseases (STDs), such as Gonorrhea, are also, therefore, on a continuous rise. These diseases are specifically troublesome to control as the people are reluctant in disclosing their condition due to various social taboos.[1][7][11][12]

Medscape reports published in Journal of the American Medical Association (JAMA) has stated that drug resistant Gonorrhea rates has increased in year 2014. Earlier reports in 2006-2011 says the resistance of Gonorrhea against antibiotics has increased from 0.1 to 1.4 percent. But again in 2013 it dropped to 0.4 percent which is a 70 percent drop. Recently in 2014, the rate has doubled and it is 0.8 percent.[2]

In 2014, according to Centers for Disease Control and Prevention (CDC) – “The potential that Gonorrhea could become untreatable remains real.”[2] Therefore, there is continuous need to maintain surveillance and to find new methods for curing the disease.

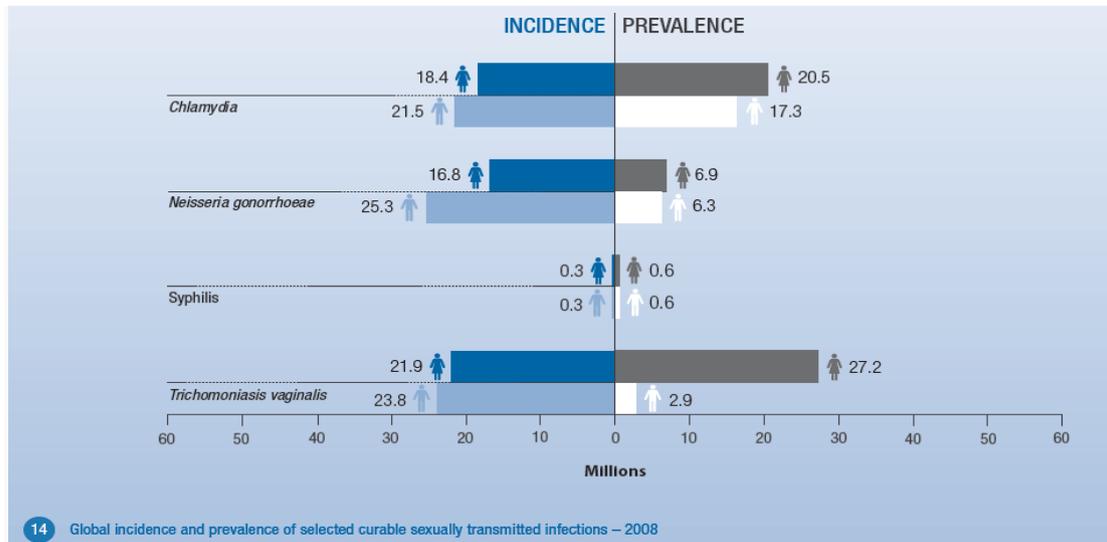
Generally a person suffering from Gonorrhea has several options to find information and share problems faced by him/her. Figure shown below lists some of them.



The person undergoing these issues wants to fit in the society but is afraid of what the society will think about him/her. Therefore, the offline options mentioned above are not that relevant in developing countries. People are reluctant in getting tested for STDs because a lot of stigma and shame is associated with these diseases. Studies have shown that 59% of men don't want to get diagnosed for STDs as it might result in unnecessary suffering, anxiety and increased social stigma. [4]

In 21st century, smart phones and internet are the best ways among youth to find answers to their questions, this provides simple and effective way to maintain their anonymity and get the information quickly. There are many benefits of using mobile applications such as convenient to use, portable, reliable, efficient both in terms of time and money, no social problems, no privacy issues etc.

At present, there are 2.6 billion registered smartphone users globally and the count is growing at a rapid rate. By extrapolation, it can be said that, by 2020 this figure will increase to 6.1 billion user globally. [3]



Total incidence of selected curable STIs for the WHO South-East Asia Region: 78.5 million. [4][1]

Many features of medical data, pose a big problem to the various data mining techniques and also the medical parameters are not in a format so that they can be directly used in those techniques[5]. There may exist a lot of missing values in medical databases, which might result in noisy, redundant, incomplete or inconsistent data. There are a few different ways in which medical data differs from other forms of data. Firstly, the data that is gathered is heterogeneous and highly complex because this data is collected from various images, interviews with the patients, physicians' observations and interpretations, and through laboratory data. The second way in which medical data is different from other data is that it has special ethical, social and legal constraints. These constraints are concerned with privacy, security, lawsuits and with possible injury to the patients. Also, there are constraints with statistical philosophies as they have poor physical formulae or equations that characterize medical data. And more often than not, medical data violates statistical assumptions. Lastly, the consequences of medical care are life or death. Which is the only and most important concern.[8][11][13]

Earlier, the statistical methods used for classification of medical data required, prior assumptions and were unable to handle the complexity of non-linear, dependent data efficiently. There are many methods for Medical Data Mining (MDM) such logistic regression, k^* , neural networks, Naive-Bayes, etc.[9]

For the diagnosis for our application, we will be using Naive-Bayes (NB) approach. This approach was found to outperform other schemes. NB is simple, computationally efficient, require relatively less data for training set, do not have many parameters and is very robust to incomplete, missing data and noise. The most beneficial feature of NB that attract physicians is that all the information that is available is utilized for explaining the decision that has been taken; This explanation of NB is natural for medical diagnosis and prognosis that is, it almost replicates the way how a physicians diagnose patients. In a large-scale comparison of Naive-Bayes classifier with other techniques it was found that NB is superior, even in cases where there were substantial feature dependencies.[5][10][15][16]

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References

1. WHO Library Cataloguing-in-Publication Data - Global incidence and prevalence of selected curable sexually transmitted infections - 2008.ISBN - 978 92 4 150383 9 (NLM classification: WC 140)
2. www.aidsmeds.com/articles/1667_28033.shtml
3. <http://techcrunch.com/2015/06/02/6-1b-smartphone-users-globally-by-2020-overtaking-basic-fixed-phone-subscriptions/#.iqn1t20:RPIH>
4. Educating and Creating Social awareness for sensitive topics using mobile application, 2013 IEEE International Conference in MOOC
5. Medical data classification with naive bayes approach K M AL-Aidaros, A. A. Bakar, Z. Othman, Center for Artificial Intelligence Technology,
6. Universiti Kebangsaan Malaysia, Selangor, Malaysia. - Information Technology Journal 11(9): 1166-1174, 2012. ISSN1812-5638/ DOI :10.3923/itj.2012.1166.1174
7. www.leaderu.com/orgs/probe/docs/safesex.html
8. www.cdc.gov/std/gonorrhea - CDC Publications No.99-8828.
9. Bosch FX et al. Epidemiology and natural history of human papilloma virus infections and type-specific implications in cervical neoplasia. Vaccine, 2008, 26S:K1-16.
10. Good I.J., The Estimation of Probabilities, Cambridges: M.I.T. Press 1965.
11. Combination of naive bayes classifier and k- nearest neighbour (cNK) in classification based prediction models. Computer and Information Science Vol.6, No 3;2013. ISSN 1913-8989, E-ISSN 1913-8997
12. California STD/HIV Prevention Training Center-STD Clinical Series
13. *Sexually Transmitted Infections Pamphlet*. Public Health Agency of Canada, 2007
14. Kononenko I, Bayesian neural networks , Biological Cybernetics, Vol 61, 1989 pp 361-370.
15. www.nlm.nih.gov/medlineplus/sexuallytransmitteddiseases.html
16. Searching for Dependencies in Bayesian Classifiers. Michael J. Pazzani, University of California. Irvine
17. Inductive and Bayesian learning in Medical Diagnosis, University of Ljubljana, Slovenia
18. Official portal of ios development, <http://developer.apple.com/resources/ios>.
19. Official portal of android development, <http://developer.android.com/training/basic/firstapp>.