RESEARCH ARTICLE OPEN ACCESS

# PRIMARY HEALTH CARE MOBILE APPLICATION IN RURAL AND SUBURBS OF INDIA: THE WAY FORWARD IN TODAY'S PANDEMIC SCENARIO

**Khushboo Gaur**[1]

**Department of Hospital Administration, Siliguri, West Bengal**

----------**********----------

## Abstract:

This paper explores the present status of Mobile based Health Care systems in, Primary Health Care Management in rural and suburbs of India, and the potential solution to fill the gap with the enabling of Primary Health Care Mobile App in today's scenario of pandemic. A descriptive research design is used as study design where naturalistic observations help in developing the hypothesis. A systematic review of the literature to evaluate the impact of Health Information System and mobile app development in order to increase the quality and accessibility of Primary Heath Care services. The Primary Health Care can be made transparent and easily accessible by the implementation of "Primary Health Care mobile app". This app can be used to implement preventive health checkups for highrisk diseases (Hypertension, Ca Cervix etc) and follow up with an adequate referral and remote consultation system, better pregnancy case registration and management leading to improved health indicators.

*KeyWords*: Primary health care, mobile app, health information system, Pandemic scenario.

----------**********----------

## I. INTRODUCTION

Digital India is new age tool to revolutionize the mode of communication in all forms. The explosive growth of mobile communications and introduction of cheap and lowcost mobile phones and network led to boom in telecom industry. But this can be seen and used as a powerful mechanism in order to deliver quality healthcare to far flung areas of rural India and also to below poverty line clientele of urban slums. As per a survey done by a telecom industry shows that more than 64% of mobile users are from rural India and by 2021, half of all individuals in remote areas of the world will have mobile phones.Mobile is becoming an important Information, Communication and Technology tool not only in urban regions but also in rural areas. India is developing digitally and number of mobile users are increasing each second due to availability of GSM network with so much high speed and fast network which is giving coverage in all remote areas of rural India too. Presently there are 638.4 million mobile users in India and one in three Indian's will own a phone by the end of 2021. In rural India, approx 49% of the adults have access to mobile phones and out of which 11% are smart phones. These figures are increasing every hour and shows a huge opportunity for healthcare industry to provide quality Primary Health Care.[1,2]

Mobile applications (mobile app) provide great chance to needy clientele so that they can access diagnosis along with easy treatment or follow up instructions in case of emergency or otherwise. Telecom industry is also using this opportunity in their benefit as smart phones are easy to operate and used as medical devices and all this eventually help in providing patient safety and highly efficient patient care.[3] Apps are software applications which can be downloaded on smart phones, tablets and e-

readers to provide solutions for an individual problem.Medical apps have an enormous potential for improving clinical practice by providing a quick, comprehensive, and up to date overview of current clinical guidelines, making a differential diagnosis, performing useful calculations and looking up a patient's investigations, which could change the way healthcare is delivered in the future.[4]

In India, presently there are 1,56,231 sub-centres, 23,236 primary health centres and 5,510 community centres catering to a population of 5000, 30,000 and 1,00,000 respectively (3000, 20,000 and 80,000 population in tribal and desert areas).[5] Each PHC is targeted to cover a population of approximately 25,000 and is charged with providing promotive, preventive, curative and rehabilitative care. This include services such as health education, promotion of nutrition, basic sanitation, the provision of mother and child care, immunisation, disease control and appropriate treatment for illness and injury.[6]

The PHCs are hubs for 5-6 sub-centers that cover 3-4 villages and are operated by an Auxiliary Nurse Midwife (ANM). Community Health Centers (CHCs) act as referral centers for the PHCs, 30 or more bedded hospitals at the taluka and district levels.

**AIM** :This paper explores the present status of Mobile based Health Care systems in Primary Health Care Management in rural India, and the potential solution of development of Primary Health Care Mobile App to fill the gap.

**METHODOLOGY**: A systematic review of the literature to evaluate the impact of Health Information System and development of mobile app in order to increase the quality and accessibility of Primary Heath Care services in rural India and urban slums.

Mobile application was developed with basic infrastructure which can be used on android and windows phones and will provide information of speciality wise doctors availability along with the facility of providing basic treatment for common diseases.

The Primary Health Care can be made transparent and easily accessible by the implementation of "Jeevan Prayas: Primary Health Care mobile app". This app can be used to implement preventive health checkups for highrisk diseases (Hypertension, Ca Cervix etc), lifestyle modifications, dietary & nutritional requirement education, mother and child health, medication reminder, treatment and follow up for the patients of rural area and thus increasing efficiency of service care with an adequate referral and remote consultation system, better pregnancy case registration and management leading to improved health indicators.

This app Jeevan Prayas is compatible with android and windows based system. At the homepage of app shows about us which has information about mobile number of MO I/C can be accessed as shown in Fig 1.


**Figure 1 : Jeevan Prayas homepage**

- List of symptoms appear
- Select 'Symptoms'
- Go Back to main menu
- Select 'Possible cure'
- Possible Treatment flashed along with the advice to visit the doctor

Mobile number of all the visiting specialists. In enquire section questions and queries of patients about their health will be addressed. As the patient access the mobile app first option for registration of patient flashed where patient or user can enter his/her name, age, sex, height, weight and login password.

**Result**

**a) Monitoring**

It can also be used to monitor the patient of chronic illness (blood glucose monitoring for patient of diabetes or blood pressure monitoring for hypertensive patient) with the help of UID NO (UNIQUE IDENTIFICATION NO) which will be generated at the time of registration. If patient of Hypertension wants to monitor his/her BP twice daily he /she can feed the blood pressure along with the time. The app helps in depicting the result in form of graph and if there is any striking change in BP will show it with an alarm.This graph can be shown to physician in next visit by the patient. **(Fig 3)**

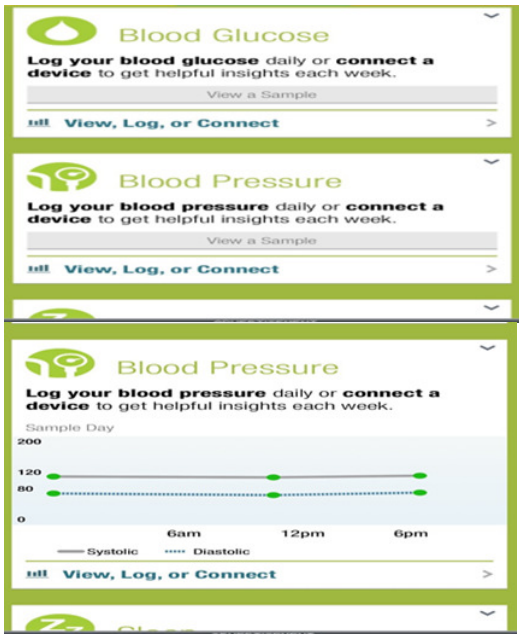



**Figure 3**: Blood Glucose & Blood pressure graph

**b) e-Prescription**

If a registered patient wants to avail e-prescription for his ongoing treatment. On selecting the disease or diagnosis he can get access to his prescription which will have name of the drug, dosage, route of administration, directions to administer it along with name of the drug prescribing doctor with start and end date of the medication so that a dose reminder can be set. **(Fig 4)**

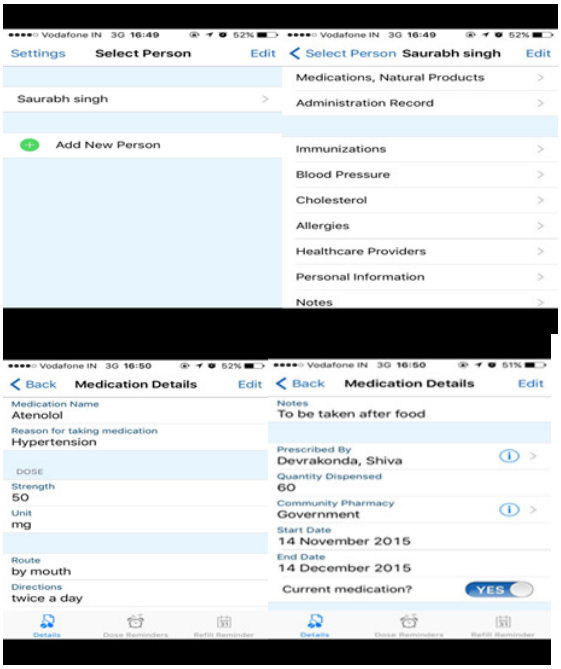



**Figure 4**: Medication chart reminder

**c) Dose reminder**

If patient want to set the reminder for the medication he can set a weekly or daily reminder which gives an alert in form of alarm to the patient so that no dose of daily drugs will be missed. **(Fig 5)**

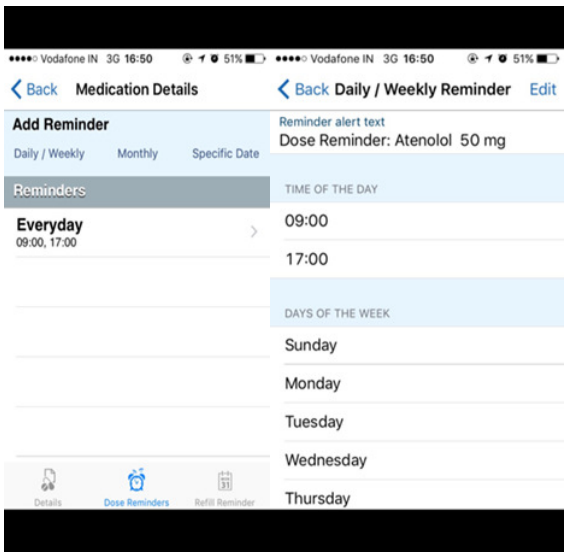



**Figure 5: Dose Reminder**

**d) Follow up** : This app has a feature to give follow up reminder alarms to the patients so that refill of the drug can be done well in time. Patient can set the alarm according to his need and requirement. (Fig 6)

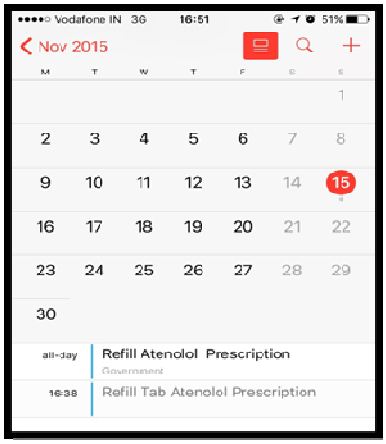
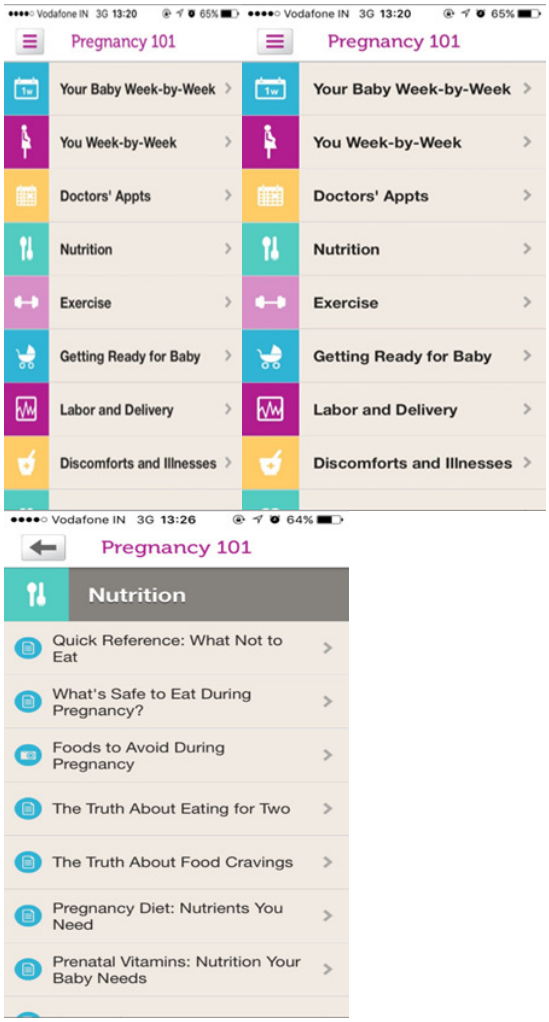



Figure 6: Prescription refill reminder

**e) Mother & Child health care**

It shows progression of baby's growth week by week along with the feedback on mother's body changes happening during pregnancy. It gives information about diet of pregnant lady along with knowledge on do's and don'ts of pregnancy. (Fig 7)




## Discussion

It is a mobile based primary health care management system which will bridge the gap between care provider and the end users. The daily wagers will also be benefitted as they can take appointment and consultation process will got fasten and it will help them in saving time and their income which mostly got lost the day they go for visit PHC. With the help of "Jeevan Prayas" mobile app delivery of effective and efficient primary health care can be done specifically in the rural and urban slums.

**References:**

[1.] Francesc Lopez Segui, MSc, Carme PratdepaduaBufill, BSc and Francesc Garcia Cuyas, MD, PhD The Prescription of Mobile Apps by Primary Care Teams: A Pilot Project in Catalonia.

[2.] (https://digitalequality.in/smart-phones-as-educational-tools-a-reality-check-from-rural-india/ smart phones as educational tools: a reality check from rural india: k vaijayanti | aug 8, 2018 : centre for communication and development studies.

[3.] mHealth Economics 2017. Current Status and Future Trends in Mobile Health. Research2Guidance;2017. Nov,2 018-06-04]. http://www.uzelf.org/wp-content/uploads/2017/12/R2G-mHealth-Developer-Economics-2017-Status-And-Trends.pdf webcite.

[4.] Papageorgiou A, Strigkos M, Politou E, Alepis E, Solanas A, Patsakis C. Security and Privacy Analysis of Mobile Health Applications: TheAlarmingStateofPractice.IEEEAccess.2018;6:9 3909403.doi:10.1109/ACCESS.2018.2799522. [CrossRef]

[5.] https://community.data.gov.in/state-ut-wise-sub-centres-in-india-as-on-31st-march-2017/State/UT-wise Sub Centres in India as on 31st March, 2017: April 9, 2018 : OGD PMU Team. https://archive.india.gov.in/citizen/health/health.php?id=79)https://community.data.gov.in/functioning-community-health-centres-chcs-as-on-31-03-2016/)

[6.] Steinhubl SR, Muse ED, Topol EJ. Can mobile health technologies transform health care? JAMA. 2013;310:2395–2396. [PubMed]