# Evaluating feasibility and potential impact of 'whatsapp' smart phone application education intervention on self-medication practices of medical and non-medical professional course students in Chennai, South India

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**ABSTRACT**

**Introduction:** Self-medication is defined as consuming drugs without advice of a physician and is wide prevalent among youth. Smart phone application Whatsapp was introduced in 2009 and is a popular mode of communication among professional course students. This project aims to study the impact of 'whatsapp' smart phone application intervention on self-medication practices among professional course students.

**Aims &Objectives:** To capture the knowledge, attitude and self-medication practices among medical and non-medical professional course students in Tagore Educational Institutions, Chennai and to assess the effect of 'whatsapp' smartphone application intervention on self-medication practices among the experimental group.

**Materials & Methods:** A pre test and post test, was conducted to assess the knowledge, attitude and self medication practices among medical and non-medical students of Tagore Educational Institutes, Chennai. The intervention phase included the design and delivery of educational content on perspectives of self-medication through whatsapp to study participants.

**Results:** The prevalence of self-medication practice is 83%, 81% and 55% in medical, dental and engineering group respectively. At the endline survey after the intervention to medical group, the prevalence in all the above groups as 80%,50% and 74% respectively.

**Conclusion:** Self-medication is found to be common among medical students.The results demonstrate that there is no significant change in knowledge, attitude and practices of self-medication after intervention using a mobile application.The use and impact of mobileapps for health information communication can be explored in detail with various other health related topics.

**Keywords:** Allopathy, intervention,medical,prevalence, self medication, whatsapp

## INTRODUCTION

Self-medication is defined as consuming drugs without advice of a physician either for diagnosis, prescription or surveillance of treatment.[1] This includes acquiring medicines without prescription, resubmitting old prescriptions to purchase medicines, sharing medicines with relatives or members of family or using leftover medicines stored at home.[2]

Self-medication practices amongst the youth have become a significant problem as they are exposed to advertisements of the pharmaceuticals which misdirect them in incorrect self diagnosis and usage of the drugs on their own. A survey on widely advertised self-medication medicines indicated majority of college students used at least one of the advertising products, without discussing with their physicians.[3] Studies on self-medication practices among medical and business students of age group 18-25 years in Karnataka and Tamil Nadu states, revealed the prevalence as 79% and 80% respectively.[4,5]

Mobile applications introduced in 2002 with wireless email facility have attained enormous growth for showcasing the world in the hand-held devices and are widely popular among youth. Whatsapp,started in the year 2009, is an instant messaging application enabled to send images, videos and audio messages, is mostly used by students for constructive and hobby chatting. As of October 2014 survey [6], Whatsapp is the most globally popular messaging application with more than 600 million active users with 70 million users in India. World health organisation (WHO) supports mobile health (mhealth) as medical and public health practice supported by mobile devices.[7]

To our knowledge, till now, no study was conducted to assess the self-medication practices through 'whatsapp' smart phone application intervention.This project aims to study the

impact of 'whatsapp' smart phone application intervention on self-medication practices.

**METHODOLOGY**

**STUDY SETTING:**

This study was conducted among the medical and non-medical students of Tagore Institutions to assess their self-medication practices. Tagore Educational Institutions in Chennai includes Medical, Dental and Engineering colleges with a total student intake of 3000 annually.

**STUDY DESIGN:** The present study is a intervention study and a purposive sampling technique was used and sample of three hundred (300) participants was selected from the students enrolled at Medical, Dental and Engineering colleges of Tagore Educational Institutions, Chennai who are active users of 'whatsapp' application. They constitute three groups each of hundred (100) students from above mentioned professional courses, which in turn comprises of fifty (50) boys and fifty (50) girls in each group.

Students who are active and regular users of 'whatsapp' and willing to provide written informed consent to enrol in the study were included and students who are non-users of 'whatsapp' were excluded.The study period was from April – March 2015.

Sampling: Purposive sampling technique among the active users of 'whatsapp' enrolled at Medical, Dental and Engineering colleges of Tagore Educational Institutions, Chennai.

Information on demographic details, and knowledge, attitude, practice related data variables assessing various aspects of self-medication practices are included. The educational intervention package consisted of videos, images and texts . All the data was collected inTagore Eductional Institutes,Chennai and Surveys were conducted using questionnaire during the leisure hours of the students in hostels. Approval for conducting the study was obtained from Institutional Ethics Committee of Tagore MedicalCollege and Hospital, Chennai and from the Heads of institutions of Medical, Dental and Engineering colleges of Tagore Educational Institutions, Chennai.

**STUDY METHOD**

**PRE-INTERVENTION ASSESSMENT:**

A survey was conducted in medical, dental and non-medical (engineering) colleges belonging to Tagore Educational Institutions, Chennai. Approval was obtained from the ethics committee and Heads of these institutions for conducting this survey. The participants were purposively selected after ensuring to be active users of whatsapp and after obtaining written informed consent were included in the survey. A pre-tested, structured self-administered questionnaire after the pilot testing, was distributed amongst the participants in the hostels and were asked to fill it up and collected by the investigator. The questionnaire has been divided into three parts, first section assesses the demographic details of the participants, second section assesses the practice of self-medication, and the last section deals with the attitude of students towards self-medication.The data of the baseline survey was analysed and themedical group which was found to be with greater prevalence of self-medication practices was chosen for the intervention as experimental group.

**MODE OF INTERVENTION :**

Intervention was given through the smartphone-application,'whatsapp' in the form of videos, images and text messages to the experimental group of participants with a frequency of sending learning content thrice in a week, on alternative days for duration of one month. The intervention package designed is solicited through the open source websites conforming with global copyrights policies. This information in the packageis aimed at educating the experimental group participants about the side-effects, long-term complications of a particular group of drugs which may promote drug-dependency, contraindications and ill-effects when used as self-medication.

**POST INTERVENTION ASSESSMENT**

An end line survey was conducted on all the three groups of participants after one month of providing the intervention. The changes in knowledge, attitudes and practices between experimental group and control group participants were assessed at baseline and end line surveys. Data entry and statistical analysis was done through SPSS version 18. Descriptive data analysis such as proportions, means was calculated. Inferential analysis was conducted with Chi square test to identify significant associations.

**RESULTS**

A total of three hundred (300) students were enrolled in the study, with equitable gender representation of both the genders.The medical students group found to be with higher prevalence (81%) of self-medication practices was chosen as the group to which the intervention was provided. The mean age of study participants was 20 years. The socio-demographic details of the study participants were shown in Table 1.

**Table 1: Socio-demographic details of the study participants**

Group 1-Dental, Group 2-Engineering, Group 3-Medical

| Sl. No. | Variables | Group 1 N=100 | Group 2 N=100 | Group 3 N=100 | Total N=300 N(%) |
|---|---|---|---|---|---|
| 1 | Gender | | | | |
| | Male | 50 | 50 | 50 | 150(50) |
| | Female | 50 | 50 | 50 | 150(50) |
| 2 | Age | | | | |
| | <20yrs | 37 | 73 | 89 | 199(67) |
| | >20yrs | 63 | 27 | 11 | 101(33) |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Academic year of study | | | | |
| | First year | 9 | 27 | 6 | 42(14) |
| | Second year | 12 | 21 | 55 | 88(29) |
| | Third year | 23 | 33 | 21 | 77(26) |
| | Fourth year | 56 | 19 | 18 | 93(31) |
| 4 | Income | | | | |
| | 5000-15000 | 18 | 15 | 59 | 92(31) |
| | 16000-30000 | 28 | 37 | 25 | 90(30) |
| | >31000 | 54 | 48 | 16 | 118(39) |
| 5 | Residence | | | | |
| | Day Scholar | 26 | 28 | 18 | 72(24) |
| | Hosteller | 74 | 72 | 82 | 228(76) |

**Table 2: Self-medication characteristics at baseline and endline among the study groups**

| Sl. No | Parameters | Group 1 N(%) | | Group 2 N(%) | | Group 3 N(%) | |
|---|---|---|---|---|---|---|---|
| | | Baseline (N =81) | Endline (N=80) | Baseline (N=55) | Endline (N =50) | Baseline (N =83) | Endline (N =74) |
| 1 | SM using previous prescriptions | 38(47) | 37(46) | 27(49) | 29(58) | 61(73) | 44(59) |
| 2 | Allopathy medicines | 77(95) | 76(95) | 52(95) | 47(94) | 82(99) | 73(99) |
| 3 | Pharmacy as a source | 74(91) | 70(88) | 51(93) | 42(84) | 74(89) | 69(93) |
| 4 | Awareness on ADE | 60(74) | 59(74) | 6(11) | 4(8) | 74(89) | 65(88) |
| 5 | Experienced ADE | 9(11) | 0(0) | 0(0) | 0(0) | 8(10) | 4(5) |
| 6 | Awareness on correct dosage | 15(19) | 14(18) | 2(3) | 2(4) | 45(54) | 44(59) |
| 7 | Recommended SM to others | 40(49) | 38(48) | 17(31) | 18(36) | 39(47) | 32(43) |
| 8 | Habit of checking expiry dates | 80(99) | 80(100) | 54(98) | 50(100) | 77(93) | 71(96) |

*Group 1-Dental, Group 2-Engineering, Group 3-Medical

*SM – Self-Medication, ADE- Adverse Drug Effects

Forty percent of medical students 33 (40%) are practicing self-medication for more than one year mainly for health conditions like fever 66 (80%) and common cold, headache,diarrhea& vomiting. Whereas in dental and engineering group respectively 40 (49%) and 31 (56%) of them are practicing self-medication for less than 6 months. In dental group 66 (81%) of them are taking self-medication for common cold followed by fever and headache. In engineering group majority of them are self-medicating for fever 33 (60%) followed by common cold & headache. Majority of medical, dental and engineering group students are taking antipyretics as respectively 72 (87%), 59 (73%), 46 (84%) followed by analgesics and antibiotics. Majority of them are practicing it for 2-3times in a year as in 36 (43%), 27 (33%),21 (38%) among medical,dental and engineering groups respectively.Majority of them are of the opinion that the health condition being a minor problem is the reason for self-medication as 51 (61%) , 38 (47%), 26 (47%) in medical, dental and engineering group respectively followed by saving time and efforts in seeking doctors consultation and also believed this approach is economical.For both medical and dental groups textbooks serves as source of information for self-medication as 48 (58%) and32 (40%) respectively.Whereas in engineering group pharmacist recommendation plays a role in 24 (44%) of the participants in buying over-the-counter medicines for self-

Majority of the students in medical group are more than 20 years of age 63(63%) whereas in dental and engineering groups 73 (73%) and 89(89%) are below 20 years of age respectively. According to the year of study majority of the medical students are in final year 56(56%), in dental group 33(33%) are in third year and in engineering group 55 (55%)of them are in second year.

At baseline, self-medication practice prevalence is found to be 83 (83%) in medical group,81(81%) in dental group and 55(55%) in engineering group.

Among them 61(73%) of medical group, 38 (47%) of dental group and 27 (49%) are practicing self-medication by using previous prescriptions given by the physicians. Majority 82 (99%), 77 (95%) and 52 (95%) are taking allopathy medicines among medical, dental and engineering groups respectively.

medication. Medical students believed that self-medication is harmful 52 (63%) and 32 (39%) of them are not in favour of self-medicationwhereas in dental & engineering group majority of them have an opinion on self-medication as harmless as 42 (51%) and 28 (51%) and 39(48%), 20 (36%) are in favour of self medication respectively.

The end-line assessment was conducted in all three groups after concluding the intervention.

Medical Students Group: Self-medication was found to be practiced by 74(74%) of medical students who form the intervention group. Approximately sixty percentage 44(60%) of them are practicing self-medication on the basis of previous prescriptions and 73 (99%) of them are consuming allopathy medicines.Majority, 69 (93%) of them procure medicines from pharmacy and 65 (88%) of them are aware of side effects and a small numbers of them 4(5%)of them experienced side effects. Almost sixty percentage 44 (59%) of them are aware of dosages of the drugs they used for self-medication and 32 (43%) of them would recommend self-medication to friends and families for minor health conditions. Habit of checking the expiry date is present in 71 (96%) of medical students.Majority of medical students were practising self-medication for more than one year35(47%) most commonly for health conditions like fever 48(65%) followed by common cold, headache & stomach pain. The common drugs being antipyretics 60(81%) followed by analgesics, antibiotics, antacids. Twenty eight (38%) medical students were practicing self-medication for 2-3times in a year.Majority of medical students were thinking that the illness being a minor ailment 51(69%) is the reason for self-medication.Textbooks were the source of information on self-medication for 45(61%) medical students. Majority of medical students were thinking that self-medication is harmful 55(74%) and were not in favour of self-medication 34(46%). The commonly 41(55%)expressed reason for self-medication is the belief that it could save time and money.

Dental and engineering students groups: Dental and engineering groups are taken as control groups and also assessed in the end line study. As shown in the Table 2, the shift in knowledge, attitude and practices on self-medication is smaller or negligible in some variables.Overall shifts in knowledge, attitudes and behaviours between baseline and end line points are found to be statistically non-significant.

As a qualitative component, we assessed the feedback from 30 participants who were in the intervention group by interview technique using a pre-tested instrument which captures the opinions expressed by the participants as evaluated using Likert Scale.

**DISCUSSION**

Self-medication practises are found to be common among medical course students as 83% and 81% in dental course students in this study. Literature shows wide prevalence ranges for self-medication among medical professional course students such as 38.5%,57.05%,73%,88.18%[8,9,10,11] respectively. This is similar to other studies10,11where high prevalence of 88% was found in medical students.The reasons could be due to their exposure to pharmacology subject as part of the medical course curriculum, easy accessibility to pharmacies and also awareness about most common side-effects and common health conditions which they consider as minor. Previous prescriptions by qualified physicians 73% served as main references for self-medication for similar conditions in future or as in frequent episodes of headaches or seasonal conditions like common cold and diarrhoea. This is comparable with 54.3% identified in a study[10] where prescriptions were used to procure medicines through pharmacies. Allopathy medicines are used as self- agents more commonly 95% of students which is also similar to other studies as 80% [10,11] and awareness on side effects of drugs was high(74%) among medical group students compared to nil or negligent awareness among engineering group students.This can be explained by the course

requirements of pharmacology for medical students compared with engineering group students.Awareness on dosages of medicines is average (19%) among the medical group who are commonly self-medicating which can be a knowledge gap and could lead to irrational usage of antibiotics which can lead to emergence of anti-microbial resistance.In this study, antipyretics followed by analgesics are the most common medicines used for self-medication in medical professional students. The average duration of practicing self-medication is three years which explains the initiation of this practice with the entry into medical school and other contributing factors like easy accessibility with pharmacies and reading materials

**Table 3: Feedback responses from intervention group participants**

| Sl. No | Response | Strongly Agree N(%) | Agree N(%) | Neutral N(%) | Disagree N(%) | Strongly disagree N(%) | No response N(%) |
|---|---|---|---|---|---|---|---|
| 1 | The subject is relevant to my academic course | 13(43) | 11(37) | 2(6) | 0 | 0 | 0 |
| 2 | The study improves my understanding on Self medication | 7(23) | 18(60) | 2(6) | 0 | 0 | 0 |
| 3 | Because this study is sanctioned by ICMR | 1(3) | 11(37) | 10(33) | 2(6) | 0 | 0 |
| 4 | I think participating in this study will be a novel experience | 1(3) | 7(23) | 7(23) | 4(13) | 0 | 1(3) |

to instill confidence to continue with self-medication within safe ranges of manageable side-effects.

There has been a significant change in the mobile usage worldwide in the recent times with the introduction of "mobile apps". Literature has documented the influence of mobile apps on life-style related behaviour changes in young adults. The usage of mobile apps for health communication is widely reported in peer literature and is constantly evolving with the introduction and wide availability of wifi facilities in college campuses, libraries, hostels and increased affordability of internet packages by young adults.In the recent times "whatsapp" emerged as the most popular platformfor informal information sharing among various population groups through multi-sensory communication.[12,13,14] This advantage of disseminating health information through various modes other than texts such as pictures, flow charts, videos enhances the receiver-end experience of learning.

In this study, it is observed that using mobileapps as platform for disseminating health information to medical professional course students is found to be an act of ease and convenience and also well received. As highlighted, multiple formats were used effectively to send health information regarding self-medication and majority of students mentioned that the intervention is very useful. But it is unclear about the impact of this kind of health information dissemination on behavioural change as we did not appreciate statistically significant attitudinal shift towards minimizing the self-medication and its associated practices in the intervention group.This may be due to the subject matter itself as medical students have the professional exposure to the subject,easy accessibility to procure medicines and seek expert consultations before refilling the previous prescriptions for self-medication.These factors could have resulted in minor changes in the attitudes towards self-medication even in the intervention group as is also the case in comparison groups.

Using mobileapps as a platform for health information and communication has advantages of reaching wide numbers through minimal efforts supported by technology.It is instantaneous in reception by the end user without delay. We propose the content delivered as blanket approach for the entire group rather than personalized approach, and lacking in personal touch and tone was not powerful enough to instil strong motivation in the participants to consider and act upon positive behavioural change. These observations might have played a role in this study which recorded subtle changes in the attitudes and practices of self-medication.

Majority of the participants expressed that information received through video format was most interesting and captured their attention effectively than text content alone. They also felt that sharing the content with their peers who were not a part of the study also added value to their learning. The limiting aspect of using a mobileapp platform for the intervention was that the impersonal tone of the content received did not inspire them to change their behaviours. Participants recommended that to make this kind of intervention more successful, conducting a lecture session on self-medication and having a discussion forum with study participants as part of study protocol will enable the learnings to translate into actions by facilitating behavioural changes.

## CONCLUSION

Self-medication practices are common among medical professional course students and using mobile application such as whatsapp did not result in significant changes in behaviour of self-medication practices among medical professional course students.

## PERSPECTIVES

Utilising mobileapps for educational intervention can be further studied in future in different subjects owing to the popularity among young professional students.

The use and impact of mobileapps for health information communication can be explored in detail with various other health related topics. Medical professional course students, health care professionals could be ideal group for this kind of experimental learning as they possess certain basic levels of awareness of the subject matter and can benefit from the speedy way with which information can be disseminated.

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## REFERENCES

1. SanjeevBadiger, RashmiKundapur, Animesh Jain, Ashwini Kumar, SanjayPattanshetty, "Self Medication patterns among medical students inSouth India". Austraasian Medical Journal 2012; 5( 4): 217-220.
2. Zafar, S., Syed, R., Waqar, S., Zubairi, A., Vaqar, T., Shaikh, M., Yousaf, W.,Shahid, S., Saleem, S. "Self-medication amongst universitystudents of Karachi:prevalence, knowledge and attitudes". Journal of the Pakistan Medical Association 2008;Vol 58, Issue 4: PP 214-217.
3. Kayalvizhi S, Dr. R Senapathi,"Evaluation of the perception, attitudeand practice of self medication among business students in 3 selectedcities,South India", International Journal of Enterprise and Innovation Management Studies 2013;Vol 1, Issue 3: PP 40-44.
4. Bang S, SmitaSontakke, Vijay Thawani, "Pre and post interventionalpattern of self medication in three common illness in staff of a tertiaryhospital". IndianJounal of Pharmacology 203;Vol 43, Issue 3:PP 275-277.
5. BhaskaranUnnikrishnan, Nithin Kumar, TanujKanchan, VamanKukarni,Mohan Kumar Papanna, RameshHolla,

SurabhiUppal, T. Rekha, Prasanna,Mithra, "Perceptions and Practices of Self-Medication among MedicalStudents in Coastal South India" 2013;8(8):4pages.

6. http://wikiepedia.org/
7. WHO-mHealth-New Horizons for health through mobile technologies-Based on the findings of the second global survey on eHealth-Global Observatory for eHealth series-Volume 3.
8. S M Abay and W AmeloAssessment of Self-Medication Practices Among Medical, Pharmacy, and Health Science Students in Gondar University, Ethiopia J Young Pharm. 2010 Jul-Sep; 2(3): 306–310.
9. Banerjee I1, Bhadury T. Self-medication practice among undergraduate medical students in a tertiary care medical college, West Bengal. J Postgrad Med. 2012 Apr-Jun;58(2):127-31.
10. James H1, Handu SS, Khaja KA, Sequeira RP. Influence of medical training on self-medication by students.Int J ClinPharmacolTher. 2008 Jan;46(1):23-9.
11. Patil SB1, S H V2, B V P3, Santoshkumar J4, Binjawadgi AS4, Kanaki AR5 Self-medication practice and perceptions among undergraduate medical students: a cross-sectional study.JClinDiagn Res. 2014 Dec;8(12):HC20-3. doi: 10.7860/JCDR/2014/10579.5313. Epub 2014 Dec 5.
12. Boyd DM, Ellison NB. Social network sites: Definition, history, and scholarship. J Comp Med Commun.2008;13:210–230. doi: 10.1111/j.1083-6101.2007.00393.x.
13. Thackeray R, Neiger BL, Hanson CL, McKenzie JF. Enhancing promotional strategies within social marketing programs: use of Web 2.0 social media. Health PromotPract. 2008 Oct;9(4):338–43. doi: 10.1177/1524839908325335.
14. Kaplan AM, Haenlein M. Users of the world, unite! The challenges and opportunities of social media.Business Horizons. 2010;53:59–68.

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