Digitalization of Mental Health Solution

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Abstract: Research is based on the current market of mental health apps in the market and will there be a recession or boom in their use. Comparing famous mental health apps available and research about their common features and what features an app should have to get more downloads in the mental health domain. Discussion about mental health policies of India. Research on the mentality of Indians and Americans on mental illness and how both mindsets differ from each other.
Keywords: Anxiety, Depression, Mental illness, Mental health apps, Psychology, Mindset, Stress

I. INTRODUCTION

Research is based on the current market of mental health apps in the market and will there be a recession or boom in their use. Comparing famous mental health apps available and discussion about their common features.

II. MARKET RESEARCH

Market: global mental healthcare apps account for the US $587.9 million in the year 2018, and is expected to generate a revenue of US $ 3918.40 million by 2027, at the rate of growth of → 23.7% [1]. The increase in stress among people around the globe is due to the financial crisis, substance abuse, marital affairs, more screen interaction, less public interaction (this increased after introduction to digital social media platforms e.g. Facebook), etc. is also increasing mental health apps usage.
Increasing mental health awareness also increases mental health apps development and usage [3]. Educated people living in big cities are more aware and are more likely to use these apps. Apps available in both IOS and android are creating more revenue, due to an increase in users. People in cities with higher financial growth (rich cities) generally prefer IOS products and people in cities with lower financial growth (poor cities) generally prefer android products [4]. The majority of users will be of age groups 18-39 [2] as they suffer most from anxiety and depression and their screen interaction is also more, so they are most likely to land upon mental health apps.

A. Mental Health Apps Are Classified Into
1) Mental disorder apps [1]
2) Substance use disorder apps [1]
3) Co-occurring disorder apps [1]
4) Coexisting disorder apps [1]

Among the above, 'mental disorder apps' had the largest revenue in 2018. It is being predicted that 'substance use disorder apps will gain an increase in usage in upcoming years due to increasing substance usage [1].
North America has the highest share of revenue generated globally from mental health apps But Asia is expected to grow at the highest growth rate due to higher population and increasing technology and developers [4].

B. Advantages Of Mobile Healthcare Apps
1) They provide anonymous and flexible treatment to mobile users [5].
2) Can cover the majority of people as the majority uses smartphones [5].
3) Can provide help to those who could not afford doctor's fees [5].
4) Do not have to physically go for consultation [5].

C. Disadvantages Of Mobile Healthcare Apps
1) The short lifespan of the app [5]
2) Data security concerns [5]
3) Net connectivity [5]

III. URBANIZATION AND MENTAL HEALTH

United Nations Population Division, by 2030, more people in the developing world will live in urban than rural areas; by 2050, two-thirds of its population is likely to be urban. The scenario in India is also affected by this trend. In India, approximately 28% of India's population lives in cities and this is expected to increase to 41% by the year 2020 (UN World Urbanization Prospects 2008).

Urbanization brings with it a unique set of advantages and disadvantages. This demographic transition is accompanied by economic growth and industrialization, and by profound changes in social organization and in the pattern of family life. Urbanization affects mental health through the influence of increased stressors and factors such as overcrowded and polluted environments, high levels of violence, and reduced social support.

The impact of urbanization is associated with an increase in mental disorders because the movement of people to urban areas needs more facilities to be made available and infrastructure to grow. This does not happen in alignment with the increase of population Hence, lack of adequate infrastructure increases the risk of poverty and exposure to environmental adversities. Further, this also decreases social support as the nuclear families increase in number. Poor people experience environmental and psychological adversity that increases their vulnerability to mental disorders.

Psychiatric disorders anxiety and depression are more prevalent among urban women than men and are believed to be more prevalent in poor than in non-poor urban neighborhoods.

The meta-analysis by Reddy and Chandrashekhar (1998) revealed a higher prevalence of mental disorders in the urban areas i.e., 80.6%, whereas it was 48.9% in the rural areas. Mental disorders primarily composed of depression and neurotic disorders. Domestic violence is also highly prevalent in urban areas. In both developed and developing countries, women living in urban settings are at the greatest risk to be assaulted by their intimates [4].

IV.   MENTAL HEALTH APPS COMPARISON

We researched 6 famous apps available on the play store namely:

1) Moodpath
2) What's up?
3) Calm
4) Mindshift
5) Happify
6) Headspace

From the above apps, we aimed to find out the key factors present in these apps which made them the most installed apps among its domain (mental health).

Famous apps are: -

A. Moodpath

1) *Number of installs:* 1,000,000+ (play store)
2) *Reviews:* 4.6 by 27,986 (play store)
3) *Size:* 13M
4) *Free*

Description: It helps you track, monitor, and understand your complaints in a structured manner and, perhaps, find out which negative behavior could be connected with worse well-being. At the end of the program, you will receive a detailed summary that you can also share with healthcare professionals, e.g. therapists, psychiatrists, or general physicians. During the screening period, you will find helpful information on psychology, signs of depression, therapy, and mental health [6].

B. What's Up?

1) *Number of installs:* 500,000+ (play store)
2) *2. Reviews:* 4.3 by 3,184 (play store)
3) *Size:* 8.9M
4) *Free*

Description: CBT (Cognitive Behavioural Therapy) and ACT (Acceptance Commitment Therapy) methods to help you cope with Depression, Anxiety, Anger, Stress, and more! With a beautiful, modern design, simple heading, and easy-to-follow methods, you can get to what helps you the most in seconds!

A positive and negative habit tracker. Set goals to practice those good habits while ending the bad ones!

10 great metaphors to help you cope with negative feelings.

A comprehensive diary to keep your thoughts and feelings together, including the ability to rate feelings on a scale-out of 10.

C. Calm
1) *Number of installs:* 10,000,000+ (play store)
2) *Reviews:* 4.4 by 247,774 (play store)
3) *Size:* varies with device
4) *Free*

Description: App for meditation and sleep. Join the millions experiencing lower stress, less anxiety, and more restful sleep with our guided meditations, Sleep Stories, breathing programs, masterclasses, and relaxing music. Recommended by top psychologists, therapists, and mental health experts. Breathing exercises to help you relax.
* Exclusive music engineered to help you focus, relax or sleep.
* Unguided timed meditation.
An original Daily Calm every day: a new 10-minute program added daily to help ease you into the day or unwind before bed.
* 100+ Sleep Stories: adult bedtime stories guaranteed to lull you to sleep.
* 7- and 21-day programs for both beginner and advanced users [6].

D. Mind Shift
1) *Number of installs:* 100,000+ (play store)
2) *Reviews:* 4.2 by 1,190 (play store)
3) *Size:* varies with device
4) *Free*
5) *Description:*

a) *CBT-Based Tools:* Interactive cognitive-based tools to help you reorient your thinking, and behavioral strategies to help you take action and make lasting positive change.
b) *Quick Relief:* When you need anxiety help fast, use these quick and easy tools to help you take a breath, ground yourself, shift your thinking, and take steps to cope.
c) *Thought Journal:* Transform your worries into balanced and helpful thoughts by identifying and challenging thinking that keeps you trapped in anxiety.
d) *Coping Cards:* Ease your anxiety at the moment by re-adjusting your thinking with helpful coping statements.
e) *Belief Experiments:* Learn how to set up experiments to test out beliefs that fuel anxiety.
f) *Facing Fears:* Overcome your fears by gradually facing them in small manageable steps.
g) *Expanding Your Comfort Zone:* Build your confidence by consistently doing new and challenging things.
h) *Chill Zone:* Listen to audio recordings of guided relaxation and mindfulness meditations to help you get, and stay, in a more relaxed and mindful headspace.
i) *Check-In:* Keep track of your anxiety and mood over time with graphs and journal entries.
j) *Healthy Habits:* Tips to set the stage to better manage anxiety by taking better care of yourself.
k) *Goal Setting:* Tools and tips to help you set and accomplish important life goals and keep anxiety in check. Reminders to keep you motivated and on track. [6]

E. Happify
1) *Number of installs:* 500,000+ (play store)
2) *Reviews:* 3.9 by 2,347 (play store)
3) *Size:* 34M
4) *Free*
5) *Description:* positive psychology, mindfulness, and cognitive behavioral therapy [6].

F. Headspace
1) *Number of installs:* 10,000,000+ (play store)
2) *Reviews:* 3.5 by 130,413 (play store)
3) *Size:* 24M
4) *Free*

Description: It can help you focus, breathe, stay calm, and create the conditions for a better night's sleep by practicing meditation and mindfulness. When you need some stress relief or lessons on creating a better sleep cycle [6].

V. CONCLUSION OF MENTAL HEALTH APPS COMPARISON

All the six apps shared
1) Cognitive-behavioral therapy (CBT) exercises
2) Mindfulness exercises
3) Linked to psychiatrist and therapists
4) Positive quotes and metaphors section
5) Breathing exercises to calm oneself
6) Copying card to write about your current thoughts
7) Goal setting section to set goals and check on them
8) Audios to calm mind, incubate sleep, and for motivation
9) Funny and positive videos to lower anxiety and stress level
10) Meditation section

VI. WHY IS MINDFULNESS ESSENTIAL TO ADD IN APPS?

Mindfulness generally refers to a psychological state of mind that is to be in the present, experiencing moments without judgment, enjoying the present rather than thinking of the past or future.

So, for a person who is depressed or has anxiety, it is crucial to practice mindfulness. It helps a person to find his/her soul. It helps in person develop a better understanding of himself or herself [7].

A. *Mindfulness Exercises Include*
1) Yawning and stretching every 1 or 2 hours.
2) Long breathing.
3) Three hugs, three breaths exercises.
4) Acceptance of thoughts and feelings exercise.
5) Raisin exercise: Focusing on the single object of the raisin is meant to bring the participant's mind to the present, to what is right in front of them.
6) Body scan: experiencing and noticing each and every body part.
7) Acceptance of social anxiety.
8) Acceptance of thoughts.
9) Mountain meditation
10) Lake meditation
11) *Mindful Seeing:* Looking at things and focussing on one. [8]

I do not think that all exercises stated above can be incorporated into an app. But few of them can be; like: timer for yawning and stretching exercise, how to breathe and meditate.

VII. AGE MOST PRONE TO MENTAL ILLNESSES

According to the American Psychological Association people in the age group,→ 18-33 years old suffer the highest stress level. And people in the age group→ 18-25 years old suffer the highest depression level (mostly college students) [9].

VIII. THE MENTALITY OF INDIANS ON MENTAL ILLNESSES

In India, there are estimated to be 56 million suffering from depression and 38 million from anxiety.

According to The Live Love Laugh Foundation (TLLLF), Indians do not accept people with mental illness in their society and segregate them from others [10].

They are of the mindset that a person with mental illness is retard and is mad who cannot be assigned any work.

Indians think mentally ill people can also make others mentally ill too and hence should be kept in isolation.

Indians do not want and fear contact with a mentally ill person [11].

These unsupported structures of society also suppress a person to open up about his mental illness publicly, and the person fears that he or she will be judged.

Family plays a major role, if they are not supportive of your condition then things for a mentally ill person could soon be changed to suicidal [12].

Indians usually consider going to a psychiatrist bad and it is not in fashion around small cities.

Indians do not easily consider themselves mentally ill unless the situation becomes suicidal [11].

The suicidal rate in India is increasing and 63% of the total is in the age group 15-39 [2].

The vulnerable population is:

1) Teens
2) Women
3) Economically and socially deprived people
4) A person with physical disabilities

I think the use of mental health apps in India will also increase because of fear of disclosure of illness in public and mobile apps keep the information anonymous and a person does not have to physically go to a psychiatrist for consultation.

IX. THE MENTALITY OF AMERICANS ON MENTAL ILLNESSES

Americans follow up with depression in an open way. They usually do not have any stigma; they are pretty open about their mental illness in friends and family.

They have therapy sessions on a usual basis, it is in fashion there.

18.1%(approx.) suffer from mental illness and 40%(approx.) get treatment. The stats of treatment are low but it is still higher than in India [13]. Mostly among age groups, 18- 39 suffer from depression and anxiety [2]. The main reason is that teens and young adults usually have body shaming and lust feelings and an urge to outstand from the crowd, these all factors combine in making them mentally ill and some of them end up taking drugs. That is why drug abuse is also the most among age groups 18-39. Teens have counseling sessions in their schools on a regular basis, this culture is also being adopted by some Indian schools but has not proven much effective as the students are not much open about their illness and the counselors are also less professional [14].

X. NATIONAL MENTAL HEALTH POLICY OF INDIA

A. Vision

To prevent mental illness and promote mental health, provide affordable, accessible, and quality medication throughout the lifespan of a sufferer [15].

B. Goals

1) To reduce mental illness cases by increasing treatments [15].
2) To create an understanding of mental illness in the country [15].

C. Objectives

1) To reduce the stigma associated with mental problems [15]
2) To make medications accessible and affordable to all [15]
3) Reduce the risk of suicides [15]
4) Protects rights of patients [15]
5) Keeping patient's information confidential [15]

I think the government can make use of mobile apps to diagnose and reach people more effectively and in a quicker way.

More people can be touched as 77% of the overall population in India owns a smartphone.

The app can diagnose depression and suggest exercise and in severe cases can direct users to a doctor online.

But all poor might not be having access to smartphones, so that can be a hindrance [15].

XI. COMPARATIVE ANALYSIS

After comparing famous apps of the mental health domain available on the Google play store, I discovered these common features in most of the apps:

1) Cognitive-behavioral therapy (CBT) exercises
2) Mindfulness exercises
3) Linked to psychiatrist and therapists
4) Positive quotes and metaphors section
5) Breathing exercises to calm oneself
6) Copying card to write about your current thoughts
7) Goal setting section to set goals and check on them
8) Audios to calm mind, incubate sleep, and for motivation
9) Funny and positive videos to lower anxiety and stress level
10) Meditation section

Indians usually consider going to a psychiatrist bad and it is not in fashion around small cities. Indians do not easily consider themselves mentally ill unless the situation becomes suicidal. But Americans follow up with depression in an open way. They usually do not have any stigma; they are pretty open about their mental illness in friends and family.

They have therapy sessions on a usual basis, it is in fashion there. The stats of treatment are low but it is still higher than in India.

Teens have counseling sessions in their schools on a regular basis, this culture is also being adopted by some Indian schools but has not proven much effective as the students are not much open about their illness and the counselors are also less professional.

XII.   RESULT AND DISCUSSION

I found out that for apps to be successful, the apps should have: -
1) Cognitive-behavioral therapy (CBT) exercises
2) Mindfulness exercises
3) Linked to psychiatrist and therapists
4) Positive quotes and metaphors section
5) Breathing exercises to calm oneself
6) Copying card to write about your current thoughts
7) Goal setting section to set goals and check on them
8) Audios to calm mind, incubate sleep, and for motivation
9) Funny and positive videos to lower anxiety and stress level
10) Meditation section

The majority of users will be of age groups 18-39(mostly college students) as they suffer most from anxiety and depression. Educated people living in big cities are more aware and are more likely to use these apps. Asia is expected to grow at the highest growth rate due to the higher population and increasing technology and developers.

For a person who is depressed or has anxiety, it is crucial to practice mindfulness. It helps a person to find his/her soul. It helps a person develop a better understanding of himself or herself.

I do not think that all mindfulness exercises can be incorporated into an app. But few of them can be, like a timer for yawning and stretching exercise, how to breathe and meditate.

Indians usually consider going to a psychiatrist bad and it is not in fashion around small cities. Indians do not easily consider themselves mentally ill unless the situation becomes suicidal. Hence, the use of mental health apps in India will increase because of fear of disclosure of illness in public and mobile apps keep the information anonymous and a person does not have to physically go to a psychiatrist for consultation.

In the U.S.A teens have counseling sessions in their schools on a regular basis, this culture is also being adopted by some Indian schools but has not proven much effective as the students are not much open about their illness and the counselors are also less professional. The Indian government can make use of mobile apps to diagnose and reach people more effectively and in a quicker way. More people can be touched as 77% of the overall population in India owns a smartphone. The app can diagnose depression and suggest exercise and in severe cases can direct users to a doctor online. But all poor might not be having access to smartphones, so that can be a hindrance.

XIII.   CONCLUSION

I have concluded that for an app to be successful the apps should have: -
1) Cognitive-behavioral therapy (CBT) exercises
2) Mindfulness exercises
3) Linked to psychiatrist and therapists
4) Positive quotes and metaphors section
5) Breathing exercises to calm oneself
6) Copying card to write about your current thoughts
7) Goal setting section to set goals and check on them
8) Audios to calm mind, incubate sleep, and for motivation
9) Funny and positive videos to lower anxiety and stress level
10) Meditation section

The majority of users will be of age groups 18-39(mostly college students) and educated living in cities (urban areas) as they suffer most from anxiety and depression.

For a person who is depressed or has anxiety, it is crucial to practice mindfulness. It helps a person to find his/her soul. It helps in person develop a better understanding of himself or herself.

The use of mental health apps in India will increase because of fear of disclosure of illness in public and mobile apps keep the information anonymous and a person does not have to physically go to a psychiatrist for consultation.

Counseling sessions in Indian schools have not proven much effective as the students are not much open about their illness and the counselors are also less professional. The government can make use of mobile apps to diagnose and reach people more effectively and in a quicker way under 'National Mental Health Policy of India. The app can diagnose depression and suggest exercise and in severe cases can direct users to a doctor online. But all poor might not be having access to smartphones, so that can be a hindrance.

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