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A SYSTEMATIC ANALYSIS OF MOBILE APPS FOR STRESS MANAGEMENT

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Abstract: Stress has become a common issue with every individual. People take it very casually at first, don't pay attention to it and avoid all the symptoms. But prolonged delay leads to severe physical, psychological and behavioral complications. Now people can self-help to overcome stress by using mobile apps. This study is performed for analysis of the available mobile applications for stress management at Google play store. The searches of mobile apps were conducted using relevant keywords, for android operating system, English language, free for download and no additional gadget required. Total 288 apps were screened and studied based on relaxation techniques used for stress management. The most commonly used techniques are music (26.7%), meditation (23.4%) and deep breathing (20.2%) along with mindfulness (9.8%).Pulmonary muscle relaxation, Cognitive behavioral therapy, visual imagery and social supports are the other techniques also used for stress management. The mobile app with higher rating and maximum downloads is consider as better for use.

Keywords: Mobile application, meditation, music, deep breathing, stress management, relaxation,

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I INTRODUCTION

Among the working professionals stress was commonly observed as a major health problem. Many believe that stress is caused by the fact that the individual is incapable; to deal with the demands of work with experience of discomfort. Stress is therefore not an event that can be observed or discrete. It is not a physical dimension of the environment, a specific component or physiological responsiveness pattern(Cox, 1985). Stress sources are not directly connected to the specifics of the individual or the working environment but are related to external relationships and events that have an impact in the workplace, for example family problems, financial challenges, life crises like family deaths(Cooper, 2013). People who have stress show signs of a physical, emotional or psychological stress response. Stress triggers an 'alarm' response that physically overcomes the resistance phase which starts a toxic cycle and causes sleep deprivation, tiredness, and irritability and concentration problems. Increased Stress causes, the body to become victim of disease and infection quickly.

Stress in various organizations is one of the major causes of absenteeism, which harms Indian economic development. The WHO states that worldwide depression exists in a population of 322 million and almost half of them live in the South-East Asian and West Pacific regions, reflecting relatively large numbers of people in India and China. Between 2005 and 2015, the total estimated number of individuals living with depression increased 18.4%.In India, the total number of depression cases in 2015 was 5,66,75,969, or 4.5% in 2015, and 3,84,250,93 in total, which was 3% in the same-year population. Suicide takes place throughout the entire lifetime and is the second leading cause of death among 15 and 29-year-olds worldwide in 2015. India accounted for the highest estimated number of suicides in the world in 2012.(WHO report, 2017).

Persistent stress causes mental health problems like depression, anxiety, insomnia, complication in the heart, diabetes, etc. Person reaches a phase of exhaustion with adverse consequences only after prolonged exposure to stressors. In 1976, Selye introduced the terms 'distress' and 'eustress' to distinguish between maladaptive and adaptive impacts, respectively (Selye, 1976). Eustress is a term for positive stress and distress refers to negative stress. These stress effects depend on whether stress is connected to the desired or unwanted effects. Emotional stress is often accompanied by change in the perceptual, cognitive,

behavioral and physiological functions of the person. In fact, the answers to stress are often categorized as psychological, behavioral or physiological. Some reactions are controlled and planned more than others. These are often called coping mechanism which are deliberate efforts to overcome the problem situation or, more simply, to deal with the experience itself (Lazarus & Folkman, 1984).

A mobile application is a program designed to run on specific software, mobile handheld devices like tablets and Smartphone's. Today, the access of diverse app to our personal, professional and social lives is inescapable. It is anticipated that by 2019 number of mobile users in the world will cross five billion marks. In 2016, around 62.9% of the world's population owned a mobile phone. The penetration of mobile telephones is expected to continue to rise to 67% in 2019.For 2017, it was forecast that China would have more than 1.4 billion mobile connections, with more than a billion projected for India. The increasing popularity of Smartphone can account for the majority of mobile market growth. Roughly 38% of the mobile users were Smartphone users by 2014. It is anticipated that this will reach more than 50% in the coming years. In a five-year period, the number of Smartphone users worldwide is expected to grow by 1 billion, which is expected to reach 2.7 billion in the world (Statistaresarch, 2016) Mobile phone apps are 24/7 accessible and can be customized according to the need of users and reduce obstacles to face-to-face assistance, such as stigma or mental health discomfort. It is convenient to avoid the embarrassment as well as cost to visiting a professional. Stress management applications have been designed to help themselves with anxiety, ranging from symptom monitoring to education through evaluation and management.

Appropriate therapeutic action is positive in a highly stressful individual. Therapies for stress management are scheduled to teach individual stress relief techniques, with a schedule of weeks or months. Some stress management therapies include interaction, biofeedback, relaxation, Cognitive behavioral therapy (CBT) and various activities (yoga or meditation). Studies have shown that psychological multidimensional interventions are important for reducing stress and have enhanced subject coping behavior (Ranta, 2009).Consideration stress reduction, especially in view of psychosocial hazards of global economic nature, is an effective method for managing stress and boosting psychological resiliency (Zołnierczyk-Zreda, Sanderson, & Bedyńska, 2016).Meditation works to reduce stress and depressed feelings in the workplace (Manocha, Black, Sarris, & Stough, 2011). The outcome of standard stress management techniques was insufficient in today's demanding work scenarios to meet daily needs of population. Mobile applications have the ability to be easier to use and

easier to access while educating end-users on self-management, which is also available 24x7 without costs. Stress management therapy is used by professionals that help stressed people to alleviate their tension and stress. Personal health technology seems promising to support health and welfare people themselves. In several studies, for example, web-based therapies were used for treatment of stress and anxiety related health problems. It is effective in reducing stress, increasing knowledge of depression and anxiety, developing better treatment attitudes and taking a safer approach to dependent addictions. Convenient web-based stress management can simultaneously reduce stress on the part of workers and tackle stigmatic behavioral health problems by incorporating this prevention material into a positive stress management system. (Billings, Cook, Hendrickson, & Dove, 2008)

This research aims at thoroughly studying the status and methods of stress-related mobile apps, and tries to foresee the patterns that will be used in the near future for stress management through mobile apps. In this article, applications were divided into different categories like Self-help, integral methodology for stress management and prevention, guided meditation, visual imagery, mindfulness and breathing, music relaxing, yoga, guided relaxation, CBT, social network and more. The author criteria and user requests have been met in this classification.

II METHOD

2.1 Selecting Apps for Review

In this study, searches were carried out at the Google Play with android operating systems for mobile phones. The keywords were stress, stress management, stress reduction, stress relief, stress buster andante-stress used for search. Free to access available apps were targeted to achieve the study. Each keyword search turned up about 250 apps, many apps were repeated. Total apps searches turn out to be approximately 2000 apps. After removing duplicate from list it resulted in 729 apps. Characteristics of these 729 apps were recorded, and the apps were categorized.

2.2 Inclusion criteria

In order to include in the search apps need to have following characteristics:-

- Google play with android operating system for Smartphone.
- Free to access
- Available in English language.
- Provide to be under the categories of health and fitness or lifestyle, based on the description of stress management and well-being.

- Applicable to broad range of healthy common people. (Excluded any malady like heart, diabetics, asthma etc.)
- No gadget or accessories required to use along with app.

2.3 Exclusion criteria

Apps were excluded if they fall under following criteria:-

- Focus on the category of Entertainment, beauty, Games, books library on Google play.
- Target group of people based on medical condition weight management, mental disorder.
- Require membership of a company.
- Need additional wearable Gadgets or accessories.

2.4 Procedure and Data Analysis

Apps that met all inclusion criteria turn out to be total 288 apps. These apps were downloaded and studied. The apps were categorized based on its functionality and technique used in standard stress management intervention.
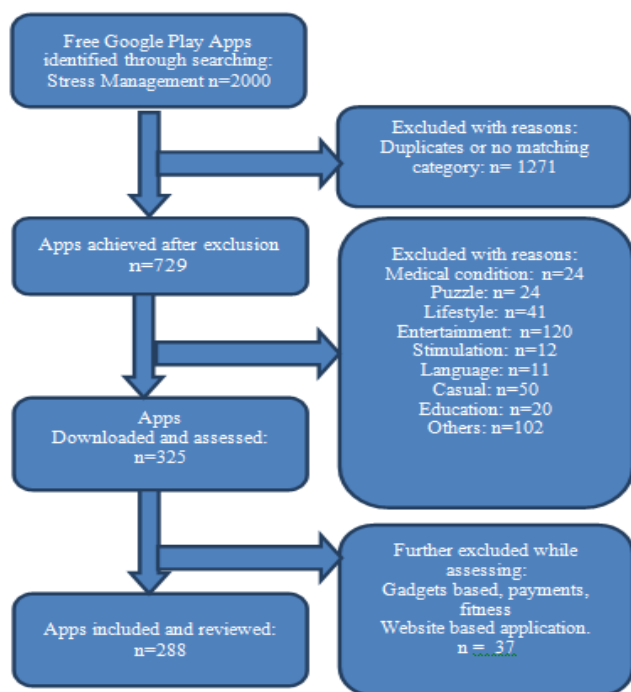

Figure 2.1: Flowchart of final mobile app selected from search.

III RESULTS

A total of 288mobile apps for stress management available on Google App Store were studied in detail.

In the study, each app was found to use more than one type of technique or varying combinations of them. As can be seen in Table 1, 123 (26.7%) apps were based on music or sound category which makes it the most used technique. These apps included relaxing songs or sounds which are associated with soothing music like rainfall, waterfall, river water flow, birds

chirping, insect sounds in jungle etc. entirely nature bounded, some as mixed nature sound with instrumental music and binaural beats.

Meditation has become a well-known concept to bust stress and constitutes bulk of the apps 108(23.4%). The apps using this technique use different types of meditation like Transcendental, Vipasana, Zen, and Guided meditation where the speaker explains the process and listeners follow it. Listeners are taught the techniques of meditation and guided to make it a habit of their daily lives. This is further followed by advancing stages to become an expert in meditation.

Deep breathing also is another popular method of stress busting as it was found to constitute 93 (20.2 %) apps. These apps focused on breathing patterns with varying durations or counts. Some apps guided instructions to follow and practice.

45 (9.2%) apps are focused on mindfulness technique. One among this category, Inside Timer, is included in Editors Choice category having more than 1 million downloads and high user rating. This technique involves guided imagery, body and mind relaxation, breathing, meditation and focus on flow of thoughts, feelings and senses.

Besides meditation and deep breathing, there are other categories of apps which have lower scoring. These include techniques like PMR (Pulmonary Muscle Relaxation), Visualization or Imagery, Cognitive Behavioral Therapy, Problem solving, building or activating social supports and coping & behavioral activation.

TABLE 3.1: FREQUENCY OF VARIOUS MAJOR TECHNIQUES USED IN MOBILE APPLICATIONS FOR STRESS MANAGEMENT

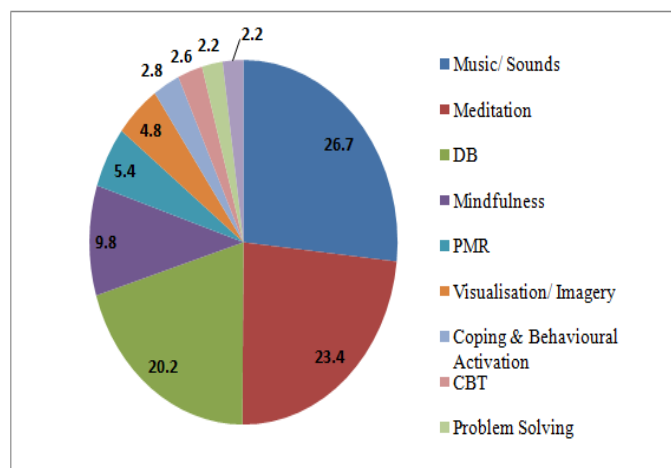| S. No.	Technique used in mobile applications	N	Percentage (%)
1	Music/ Sounds	123	26.7
2	Meditation	108	23.4
3	Deep breathing	93	20.2
4	Mindfulness	45	9.8
5	Pulmonary muscle relaxation.	25	5.4
6	Visualization/ Imagery	22	4.8
7	Coping &Behavioral Activation	13	2.8
8	Cognitive behavior technique	12	2.6
9	Problem Solving	10	2.2
10	Building or activating social supports	10	2.2

Figure 3.1: Distribution of techniques used in mobile applications for stress management.

Number of downloads of these apps were also studied as detailed in Table 2. Downloads signifies the popularity and usability among the users. As shown in Table 2, most of these stress relieving mobile applications have one lakh downloads (n=42; 14.6%), 38 apps have ten thousand downloads (n=38; 13.2%).

TABLE 3.2: ANALYSIS OF MOBILE APPLICATIONS FOR STRESS MANAGEMENT BY NUMBER OF DOWNLOADS.

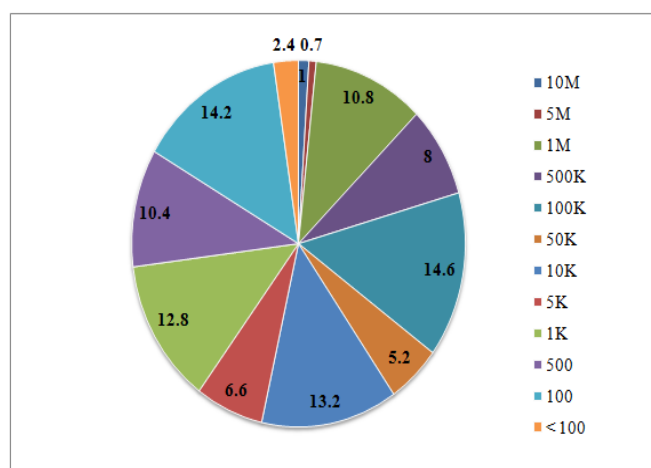| S. No.	Number of downloads	N	Percentage (%)
1	10M	3	1
2	5M	2	0.7
3	1M	31	10.8
4	500K	23	8
5	100K	42	14.6
6	50K	15	5.2
7	10K	38	13.2
8	5K	19	6.6
9	1K	37	12.8
10	500	30	10.4
11	100	41	14.2
12	< 100	7	2.4

Figure 3.2: Distribution of downloads of stress management mobile applications.

IV CONCLUSION

This study provides the availability of mobile apps under management and prevention of stress analyzed under different categories depending upon the underlying technique used.

Many apps are available which use deep breathing, meditation, mindfulness, pulmonary muscle relaxation, visualization, imagery, music or sounds, cognitive behavioral therapy, problem solving and building & activating social supports.

Apps like Relax melodies, Atmosphere, Paraná Breath, Stop Breath & Think, 7 Pranayama offer techniques of deep breathing, meditation with soothing music as a self-help program to overcome stress.

Apps like Calm, Headspace, Insight Timer, and Mindfulness are based on mindfulness program. This involves awareness and self-learning process to understand the concept of techniques as an important tool for self-management of stress. In addition to various different activities, these apps also provide tools to track the day to day observations of thoughts to enhance the user to incline towards positivity and relaxation.

Social support services provided by some apps like Wyse, talk life, 7 cup sets, serves people having similar or like-minded issues. Discussion and evaluation of different solutions to cope up with stress related to various issues like work, family, friends, social etc.

There have been much analysis of stress related apps and its categories. The stress management activities performed with the application are effective in reducing users psychological stress level (Serino et al., 2014). The concept of using app for stress management has increased and is expected to evolve in coming years with new functionality. This concept has

become an easily accessible and simple process to work out the management of stress.

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