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## **Examining Effects of Smart Phone Exercise Apps Usage on Weight Reduction in Young University Students**

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### ***Abstract***

According to WHO (World Health Organization) globally, obesity has almost tripled between 1975 and 2016. The purpose of this research study was to investigate the effects of mobile technology on weight loss in females. These days' social media has a huge impact on youngsters, and they tend to use different apps on their cell phones. Mobile apps to lose weight are an interactive tool for weight management. These mobile apps provide a calculator for calorie intake and energy expenditure to attain goals of weight loss. The purpose of the study was to investigate the effects of exercise mobile apps on weight reduction. Forty female participants from Physical Education Classes (N=40) have voluntarily participated in this research. The data was analyzed through age, height, and weight. The statistical test paired t-test was used to check average weight differences after the implementation. The results of the current study showed a significant difference in the weights of females.

**Keywords:** Mobile Apps, Weight Loss, Obesity, Exercise

### **Introduction**

Obesity has become a worldwide epidemic because of its rapid increase in numbers (Park H.S., 2008). An unacceptable level of obesity can lead to heart diseases, kidney and cancer diseases. Obesity can be prevented by the following interventions such as lifestyle changes and exercise (Karishna S, 2003; Koivusilt et al., 2007). This phenomenon poses a big socioeconomic burden, necessitating techniques to manage obesity (Wadden et al. Et al, 2011; Stewart et al. 2005). These days mobile technology is rapidly recognized as an effective tool to improve behavioral change. The use of mobile devices, computers, and information and communication technology is increasingly spreading in the healthcare industry as platforms for behavior change (Lefebvre C, 2009). Mobile technology has achieved momentum in recent years as a technique to facilitate weight loss among obese or overweight people.

Mobile innovations have been changed and will keep on changing the lives of millions of individuals around the world, for instance, mobile computing technologies are cell phones, laptops, tablets, digital books, cameras, etc.; the most impressive and appealing one is cell phones. It consolidates all parts of processing applications and remote correspondences.

The smartphone growth has been far-reaching intimations for eHealth (klasnja et al., 2014). The word e-Health was described (Hswen, & Viswanath, 2015) as a connection to health-related services delivery, for instance, the health industry. It was suggested that eHealth refer as health services and systems in lieu of the health of people. Cell phone technology is known as a conventional device in the healthcare industry; that is further ruling to expeditious broadening in the growth of mHealth apps.

Obesity is a big concern in public health around the world and gained huge intention for primary and secondary health care discussion since the 1960s, the problem is speeding up and contributing towards the increase in blood pressure, high levels of cholesterol, type 2 diabetes, and cancer (Park. et al., 2008).

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An increasing level of obesity is a major issue in public health worldwide (Appel L.J et al. 2003) because people have decreased in their level of physical activity and increased in nutrients (De tough, 2012).

Both aspects of lifestyle are considered to be the basis for weight loss and obesity (Beratarrechea, A. et al, 2014). Weight management can be handle in improving nutrition and physical activity by the application of behavioral change. The Positive results showed the creation of

New paradigms for examining and deploying in the health care and health care management. “Health” is a term that described the practices of medicine and public health, supported by cell phone devices (Free. C et al 2010).

It should be noted that weight results within digital mediations must be considered carefully as weight is regularly evaluated by self-reported. This additionally applies to the evaluation of diet and physical movement, which is generally self-revealed as well. As per non-digital interventions, mediations are additionally influenced by high attenuation rates. Accordingly, it is frequently difficult to assess their genuine effect as Participants’ within the investigation progress. (Ellis & Piwek, 2018).

Currently, the number of smartphone users has been increasing day by day, and different researchers have used mobile apps for health benefits (De joungh et al., 2012, beratarrechca et.al 2014; Kim, 2015) but due to limitations and short-term research studies on the potency of smartphone apps on weight loss concluded inconsistent findings. There are different variations of BMI that exist in different regions of the world, Asians have been reported to have higher percentages of abdominal, lipid, and liver fat compared to Caucasians. Some regions for instance Asian Indians, Malaysians, and Chinese with the same BMI, may have different proportions of body fat (Wulan, 2010).

The mHealth apps are helping tools for the health sector including healthcare workers, institutions, and physicians in developing countries. No doubt mHealth apps can be used as better health care tools in developing countries to boost the Health care sectors; that is a congestive way to improve healthcare outcomes (Kahn, et al; Thondoo, et al. 2015). The mHealth apps can improve motivation towards reducing weight. These apps can facilitate information, feedback and develop connections between supervisors and health workers (Thondoo, et al., 2014).

The assessment is very important to develop any kind of policies and programs that includes the mHealth apps but, unfortunately, evaluation of mHealth apps particularly in developing countries is very low. In a survey Research on eHealth showed that only 7% of the population in developing countries reported mHealth evaluation (WHO, 2011). The current situation of mHealth intervention apps required more effort and evaluation. Nevertheless, mHealth as an intervention can be very effective for health sectors in developing countries, the cost of a smartphone and internet access is very expensive. Further, most mHealth applications are based on the English language, therefore it can be challenging the people who don't understand this language.

The mHealth interventions encouraging healthcare sectors to disperse and share health information, but still it is very difficult to recognize how the details are developed and delivered, to confirm that it is comprehensible and can be implemented on health interventions, the major cause is to focus on the health literacy. Health literacy refers to the degree to which individuals can obtain, process, and understand basic health information and services they need to make appropriate health decisions. The mHealth apps can only be successful for high health literacy and low health literacy remained an issue. However, mHealth intervention apps should be developed in the way by using the best techniques to show all relevant information that could be understandable to the targeted audience. (Department of Health, Human Services, United States, 2000).

The behavior change researchers have concluded the prospects of mHealth technologies. The main focus was to develop behavioral change for better health. Literature showed that fit adults showed some interest in ds mHealth intervention apps that showed a moderate change in health-related behavior outcomes.

Despite, there is a need to resolve several challenges for instance, how to develop captivated behavioral change techniques to the ends, further how to build connection these behavioral techniques into health changing behavioral applications with focusing the avoiding content that may produce irritation, upset, tension, or any type of burden on them (Dennison, et al, 2013; Zhao et al., 2015). With the help of mHealth apps, patients can monitor the current status of the disease.

The efficiency and quality of current healthcare models for delivery can be improved, and medical aspects, for instance, identifying and observation will be hauled from a human doctor to a

digital doctor (Topol, 2015). The purpose of the current study was to explore the efficiency of mobile apps on weight loss in young females. The current findings showed that mobile technology could be used as an effective tool for reducing weight or obesity.

**Methodology**

**Participants**

A total of forty female students from P.E classes have voluntarily participated in this research. The consent was taken from the selected participants and they were informed that they could withdraw their participation from this research study at any time without giving any reason.

**Procedure**

Firstly, participants were divided into two groups: a) Controlled and b) Experimental. The weight, height, age of all participants were recorded. The participants of the experimental group were asked to download free full-body workout and calorie control apps on their cell phones. They all once downloaded the apps. When they were asked if there is any difficulty to use these apps, all participants responded that it's easy and fun to use these apps. By using the mobile app, the users can record their daily food calorie intake and set a target weight. They can also know about the nutritional values of a particular food and demo different types of exercises that help to achieve their target body weight. Participants were asked to perform exercises in the gym by watching the video on the apps for one hour however, the control group did not receive any instructions regarding the usage of mobile phone apps. They can perform any type of exercise on their own. The final weights of both groups were checked after 90 days.

**Delimitations**

This study is only delimited to female students studying PE in the university

Researchers have no control on the diet plan of the participants

**Data Analysis**

The current study assessed the effectiveness of weight reduction by using the paired *t*-test between the pre and post-test final weights of participants. To evaluate the effectiveness of weight the Statistical Analysis was carried out with the help of the SPSS 16 version.

**Results**

Table No: 1

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age	40	19.00	27.00	23.3750	2.07163
Height Cm	40	154.00	171.00	163.8500	4.48101
Valid N (listwise)	40				

Table 1 showed the average age (mean=23.37, SD= 2.07163) and height of respondents (mean=163.85, SD=4.48101)

Table No: 2

Paired Samples Statistics Descriptive					
		Mean	N	Std. Deviation	Std. Error Mean
Control	pre_weight	71.8100	20	6.34465	1.41871
Group	post_weight	71.7050	20	6.37177	1.42477

The above table-2 showed the average score (mean=71.8100, 71.7050 SD= 6.3446, 6.37171) of pre and post-test of the control group in weight reduction.

Table No: 3

Control group pre and post-test scores

Paired Samples Test									
		Mean	SD	SE	95% Confidence Interval		t	df	Sig.(2-tailed)
					Lower	Upper			
pre_weight	post_weight	0.1050	0.6176	0.138	-0.184	0.394	.760	19	.456

*P*>0.05

The above table showed the *p*>0.05 there is no significant difference in the weights of control group weight reduction scores.

Table No: 04

Paired Samples Statistics Descriptive					
		Mean	N	Std. Deviation	Std. Error Mean
Exp- Group	pre_weight	73.2500	20	3.8916	0.87019
	post_weight	72.4350	20	3.9014	0.87239

The above table-4 showed the average score (Mean=73.2500, 72.4350, SD= 3.8916, 3.9014) of pre and post-test of the experimental group in weight reduction.

Table No: 05

Experimental group Pre and Post t-test scores

Paired Samples Test										
			Mean	SD	SE	95% Confidence Interval		t	df	Sig.(2-tailed)
Exp- group	Pre_weight	Post_weight				Lower	Upper			
			0.8150	0.2814	0.629	0.6832	0.9467	.1294	19	.000

P<0.05

The above table showed the p<0.05 there is a significant difference in the weight reduction of the experimental group.

**Discussion**

As obesity increases its raises the socioeconomic costs, many surgical interventions have been designed to manage and prevent obesity. Recently, the range of mobile applications is growing rapidly, with around 10,000 applications worldwide focusing on diet and weight loss (Azar, K.M et al., 2013) but there are still inconsistent results available regarding the impact of apps on weight loss. (Carter et al, 2013; Laing B.Y. et al 2014; Flores et al, 2015, Semper H.M et al, 2016). To conclude, the current study demonstrated the usage of the smartphone app to successfully lose weight, more importantly for the people who often restrict their diet and physical activity.

Innovative technologies offer the best solutions for weight management practices, including smartphone applications and gadgets that make it generally simple to control calorie intake and physical activity level, cell phone applications are equipped with customized weight control instructions and calorie calculations.

Mobile technology could be used as a strategy for the motivation towards healthy behavior for obese people. Particularly Mobile technology could use as a device to support people regarding weight management. From the last three decades, obesity in youngsters has been increased twofold, and if this practice continues it could reach nearly 60% of the obese adult population by 2030 (Kelly et. al, 2008).

According to the Australian national health survey (2016) weight gain at a young age is often resultant as lifestyle changes in physical activity and unhealthy eating behavior and obesity level of adolescents is 28% and 32%, age group ranged from 12-15 and 16-17 years respectively. Also, the ratio of overweight is higher in young men than women.

This research study examined the effects of fitness and calorie control apps among young females. The current results showed that mobile apps as an intervention reduced body weight and managing the factors associated with daily living, regular self-examination on weight, physical activity, and calorie intake are the key factors that lead to successful weight loss (Burke, L. E. et al, 2005).

**Conclusion**

Mobile applications are generally considered as effective and simple to utilize, and supportive in the quest for weight reduction objectives. The capability of mobile applications in encouraging weight reduction lies in their capacity to expand treatment adherence through techniques, for example, self-checking. Several studies indicated that acceptable treatment adherence and subsequent weight reduction are accomplished within the sight of significant levels of commitment with a mobile application.

**Reference**

Appel, L. J., Champagne, C. M., Harsha, D. W., Cooper, L. S., Obarzanek, E., Elmer, P. J., ... &Young, D. R. (2003). Effects of comprehensive lifestyle modification on blood pressure control: main results of the PREMIER clinical trial. *JAMA, Journal of the American Medical Association.*

- Azar, K. M., Lesser, L. I., Laing, B. Y., Stephens, J., Aurora, M. S., Burke, L. E., & Palaniappan, L. P. (2013). Mobile applications for weight management: theory-based content analysis. *American journal of preventive medicine*, 45(5), 583-589.
- Burke, L. E., Warziski, M., Starrett, T., Choo, J., Music, E., Sereika, S., & Sevick, M. A. (2005). Self-monitoring dietary intake: current and future practices. *Journal of Renal Nutrition*, 15(3), 281-290.
- Beratarrechea, A., Lee, A. G., Willner, J. M., Jahangir, E., Ciapponi, A., & Rubinstein, A. (2014). The impact of mobile health interventions on chronic disease outcomes in developing countries: a systematic review. *Telemedicine and e-Health*, 20(1), 75-82.
- Carter, M. C., Burley, V. J., Nykjaer, C., & Cade, J. E. (2013). Adherence to a smartphone application for weight loss compared to website and paper diary: pilot randomized controlled trial. *Journal of medical Internet research*, 15(4), 32.
- De Jongh, T., Gurol-Urganci, I., Vodopivec-Jamsek, V., Car, J., & Atun, R. (2012). Mobile phone messaging for facilitating self-management of long-term illnesses. *Cochrane Database of Systematic Reviews*, (12). Department of Health, Human Services, Washington, DC. Healthy People 2010 (Group), & United States
- Government Printing Office. (2000). *Healthy people 2010: Understanding and improving health*. US Department of Health and Human Services
- Dennison, L., Morrison, L., Conway, G., & Yardley, L. (2013). Opportunities and challenges for smartphone applications in supporting health behavior change: a qualitative study. *Journal of medical Internet research*, 15(4), e86.
- Ellis, D. A., & Piwek, L. (2018). Failing to encourage physical activity with wearable technology: what next? *Journal of the Royal Society of Medicine*, 111(9), 310-313.
- Hswen, Y., & Viswanath, K. (2015). Beyond the hype: mobile technologies and opportunities to address health disparities. *Journal of Mobile Technology in Medicine*, 4(1), 39-40.
- Krishna, S., Boren, S. A., & Balas, E. A. (2009). Healthcare via cell phones: a systematic review. *Telemedicine and e-Health*, 15(3), 231-240.
- Koivusilta, L. K., Lintonen, T. P., & Rimpelä, A. H. (2007). Orientations in adolescent use of information and communication technology: a digital divide by sociodemographic background, educational career, and health. *Scandinavian journal of public health*, 35(1), 95-103.
- Klasnja, P., & Pratt, W. (2014). Managing health with mobile technology. *Interactions*, 21(1), 66-69.
- Kelly, T., Yang, W., Chen, C. S., Reynolds, K., & He, J. (2008). Global burden of obesity in 2005 and projections to 2030. *International journal of obesity*, 32(9), 1431-1437.
- Lefebvre, C. (2009). Integrating cell phones and mobile technologies into public health practice: a social marketing perspective. *Health promotion practice*, 10(4), 490-494.
- Laing, B. Y., Mangione, C. M., Tseng, C. H., Leng, M., Vaisberg, E., Mahida, M., & Bell, D. S. (2014). Effectiveness of a smartphone application for weight loss compared with usual care in overweight primary care patients: a randomized, controlled trial. *Annals of internal medicine*, 161(10\_Supplement), S5-S12.
- Mateo, G. F., Granado-Font, E., Ferré-Grau, C., & Montaña-Carreras, X. (2015). Mobile phone apps to promote weight loss and increase physical activity: a systematic review and meta-analysis. *Journal of medical Internet research*, 17(11), 253.
- Park, H. S., Park, C. Y., Oh, S. W., & Yoo, H. J. (2008). Prevalence of obesity and metabolic syndrome in Korean adults. *Obesity Reviews*, 9(2), 104-107.
- Stewart, S., McAlister, F. A., & McMurray, J. J. (2005). Heart failure management programs reduce readmissions and prolong survival. *Archives of Internal Medicine*, 165(11), 1311-1311.
- Semper, H. M., Pokey, R., & Clark-Carter, D. (2016). A systematic review of the effectiveness of smartphone applications that encourage dietary self-regulatory strategies for weight loss in overweight and obese adults. *Obesity Reviews*, 17(9), 895-906.
- Topol, E. J. (2015). The future of medicine is in your smartphone: new tools are tilting health-care control from doctors to patients. *Wall Street Journal*.
- World Health Organization. (2011). mHealth: new horizons for health through mobile technologies. mHealth: new horizons for health through mobile technologies.
- Zhao, J., Freeman, B., & Li, M. (2016). Can mobile phone apps influence people's health behavior change? An evidence review. *Journal of medical Internet research*, 18(11), 287.