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PROGRAMME DESCRIPTION

Integration of a wellness smartphone application in a school of pharmacy

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Abstract

Background: Evidence suggests that professionals experience stress, with various coping approaches detailed in the literature. **Objective:** To describe the integration of and engagement with a wellness smartphone application (app) in a school of pharmacy. **Methods:** The School of Pharmacy faculty, staff, and students were given subscriptions to Wellspace, a mobile health app. Aggregate data were analysed to determine factors that influence user engagement, activity, and well-being. **Results:** Eighty percent of didactic students and 46 faculty/staff downloaded the app. The highest rate of overall monthly user engagement (39%) was during the first month but declined throughout the time of the study (5%). Competitions for wellness-related prizes led to significantly higher engagement rates and number of steps. The presence of competitions correlated with a higher percentage of engagement (r = 0.53), number of engaged users (r = 0.53), and number of steps (r = 0.49). **Conclusion:** A wellness app was integrated within a school of pharmacy; however, poor usage limited the utility of data captured.

Introduction

Stress, anxiety, and mental exhaustion are factors known to disrupt student well-being (Marshall *et al.,* 2008; Usher, Durkin & Bhullar, 2020). Individuals in professional programmes often experience high levels of stress, with students in pharmacy school often exhibiting the highest (Gupchup, Borrego & Konduri, 2004; Marshall *et al.,* 2008; Hirsch *et al.,* 2009; Geslani & Gaebelein, 2013; Allen *et al.,* 2021). In a recent survey of 596 pharmacy students, clinically significant levels of anxiety and depression were reported by 30% and 22% of the participants, respectively (Shangraw *et al.,* 2021). During the COVID-19 pandemic, school closures, illness, and unpredictable times imposed a heavier psychological burden on the general public and students. Numerous studies detailed the detrimental effects COVID-19 had on attention, mood, post-traumatic stress disorder, confusion and stress (Brooks *et al.,* 2020; McGinty *et al.,* 2020; Copeland *et al.,* 2021). Before COVID-19, several organisations evaluated and established recommendations to address mental health and well-being within the profession. In 2018, the American Pharmacists Association, in collaboration with several other pharmacy organisations, developed policies to encourage schools and colleges of pharmacy to promote wellness and stress management within their educational programmes (American Pharmacists Association, 2019). The "Strategies to Promote a Culture of Well-being Among Students and Faculty" institute assembled several professional organisations intending to ameliorate gaps within the pharmacy curriculum by developing and/or enhancing mindfulness programmes. The 2016 Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards states that schools and colleges of pharmacy must assess perceived stress in students, faculty, and staff (Accreditation Council for Pharmacy Education, 2016).

While research has identified perceived sources of stress within the pharmacy curriculum, gaps remain

regarding specific strategies to promote positive mental well-being and personal satisfaction (Votta & Benau, 2014; Abraham *et al.,* 2021). One option includes mobile health (mHealth) applications (apps) as a readily available means for self-help interventions, such as cognitive behavioural therapy, goal setting, journaling, mindfulness meditation, and mood monitoring (Lau *et al.,* 2020). By providing convenient access to self-management of mental health, mHealth apps have evolved into a robust market. Over 350,000 apps were available in 2021, with a projected 25% annual growth (IQVIA Institute, 2021; The Business Research Company, 2023). One example of a mHealth application (app), Calm.com, Inc., was implemented in college students with notable stress. After an 8-week mindfulness meditation intervention, the majority of users reported they were satisfied, would continue using the application, and would recommend it to other students (Huberty *et al.,* 2019).

Wellspace is a mHealth app offering over 500 wellness resources, including content about general health, well-being, meditation, and sleep improvement. It incorporates well-being and sleep trackers where users self-score perceived quality in a daily journal. Built-in red flag algorithms direct users to support when users self-identify and/or score their well-being below pre-identified thresholds. Institutions can incorporate specific links into the platform, such as university/employer counselling services. Steps and physical activity are tracked via a Bluetooth connection to smart devices or entered manually by the user.

This paper details the integration and utilisation of Wellspace in a school of pharmacy. The objective is to describe the integration of a wellness smartphone app in a school of pharmacy and evaluate strategies that influence engagement.

Methods

The school of pharmacy purchased a subscription to Wellspace with internal grant funding for the 2021-2022 academic year. Links to the university career services and counselling offices were incorporated into the application. All school of pharmacy faculty, staff, and students were provided individual subscriptions to Wellspace at the beginning of the academic year. Registering a Wellspace account was voluntary and required that participants download the app on a mobile device. Participants created accounts on the platform and selected their areas of well-being interest to facilitate tailored content delivery. Users were encouraged to participate in daily well-being activities and sleep quality assessments, track fitness, and utilise tools in the content library. Steps and physical activity were tracked through links with smart devices or entered manually by the user. Daily mood and sleep quality assessments were offered to each user, and if a user reported multiple days of low mood or poor sleep quality, the application prompted them via email to contact university counselling services. This prompt would continue to appear until it was addressed by the user. Four challenges were offered, three of which had wellness prizes, i.e., standing desks and Bluetooth headphones, for winners.

Aggregate data, excluding sex/gender (not captured in the app), were provided quarterly to the school of pharmacy administrators. Descriptive statistics and correlative studies were completed.

Results

Of the 238 didactic students (first, second, and third-year), 190 (80%) downloaded Wellspace and registered an account (Table I). Additionally, 27 of 46 faculty and staff (59%) downloaded and created an account. Students in the P1 class had the highest rates of registration (100%) compared with P2 and P3 students.

Table I: Access & enrollment statistics

Participant characteristics	Given access to subscription		Enrolled in subscription	
	n	class year % of all students	n	% enrollment by class year
Didactic year				
P1	76	32	76	100
P2	88	37	69	78
P3	74	31	45	61
Faculty/Staff	46	–	27	59

Note: n = 284. (n = 238 students, 46 faculty/ staff).

The highest rate of overall monthly user engagement (39%) and daily steps (over 500,000) occurred during the first month of subscription access and declined throughout the time of study (Figures 1 and 2). The highest overall daily user engagement peaked at 52% in the first month. During this month, faculty/staff had the highest level of overall engagement, with P3 students having the highest level of student engagement. Figure 3 shows an example of the aggregate self-reported well-being and Figure 4 shows sleep quality data

provided to the school. Twenty red flags related to well-being occurred during the first month, and all were resolved following communication sent to users via email from Wellspace.

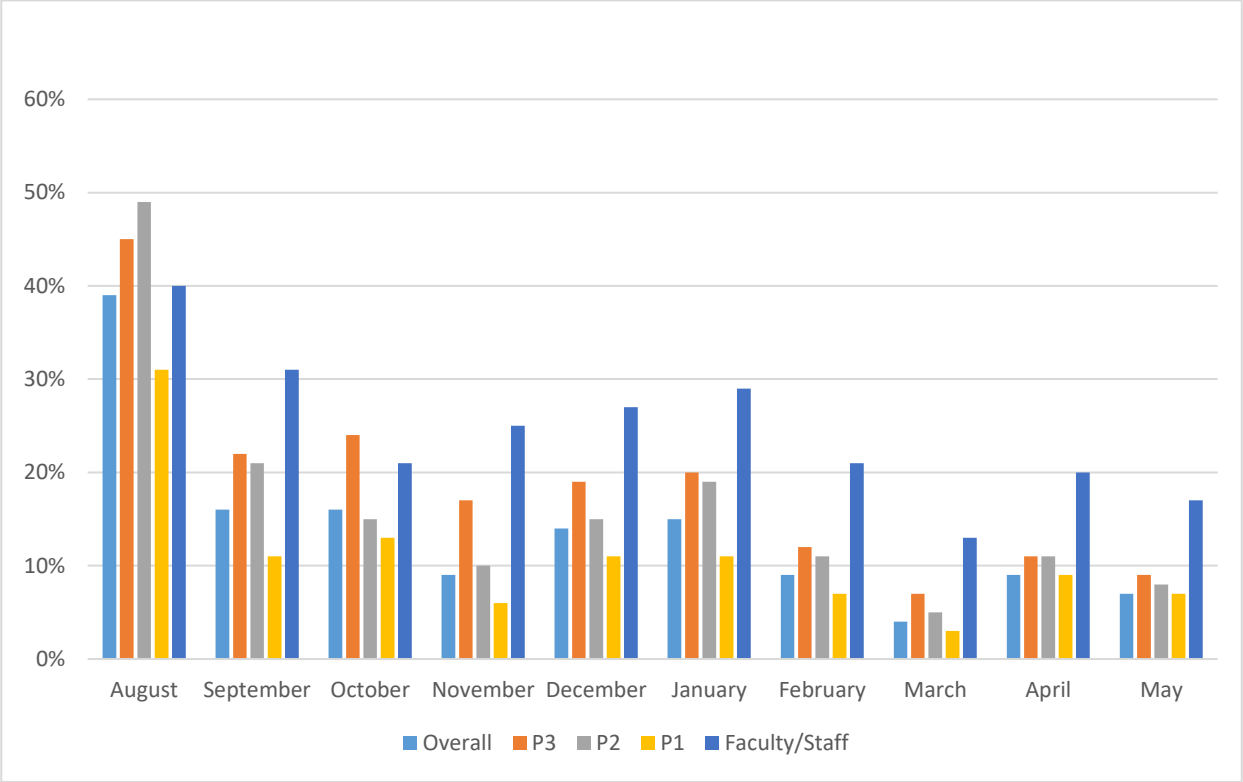


Figure 1: Wellspace app engagement by month

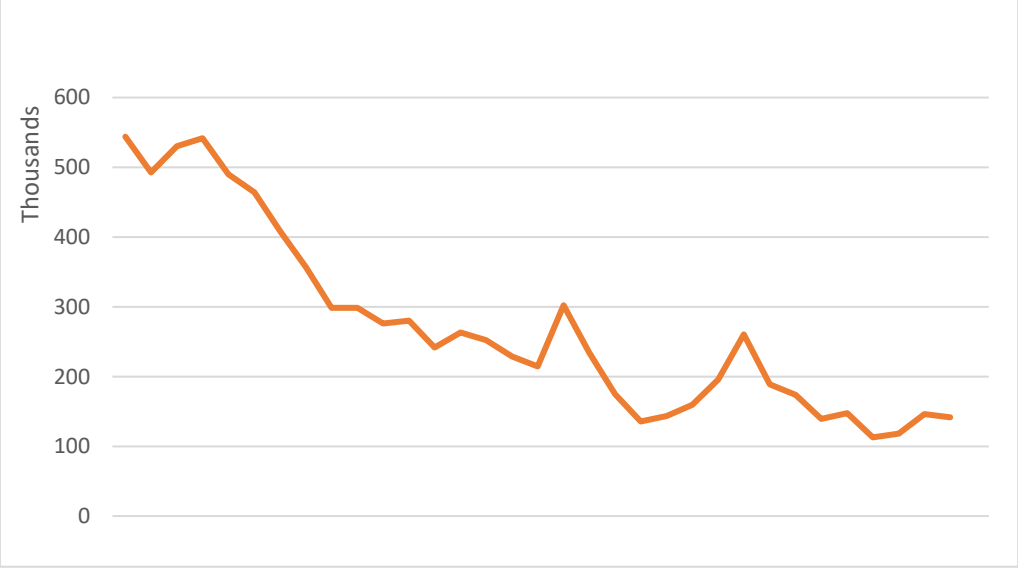
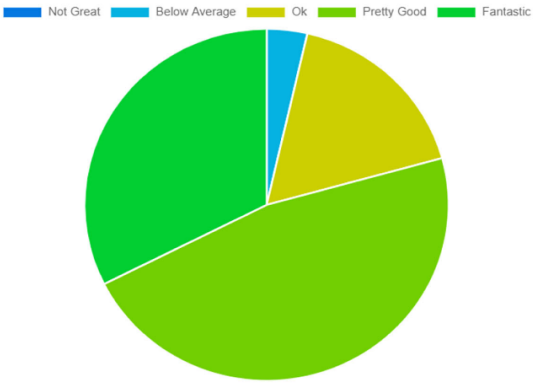
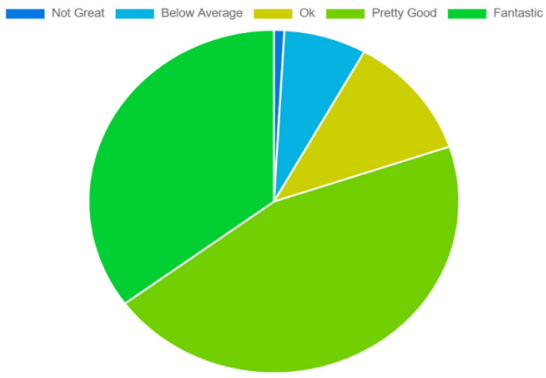


Figure 2: Overall steps by users in month one



Answer	Count	Notes
Not Good	0	
Below Average	4	Feeling mentally unwell, anxious, lacking control over my health, lacking confidence around coping, feeling unhealthy, unsupportive management, low energy levels, unproductive
Ok	19	Lacking confidence around coping, positive mental wellbeing, low energy levels, mindless eating, feeling healthy, high sleep quality, positive home environment, high energy levels, low sleep quality
Pretty Good	52	Positive financial wellbeing, feeling healthy, terrible sleep, high sleep quality, productive at work, ability to cope, satisfaction through work, in control of my health, high energy levels, thoughtful eating, motivated
Fantastic	36	Positive mental wellbeing, positive home environment, feeling healthy, high-energy levels, high quality sleep, being active, thoughtful eating, positive financial wellbeing, ability to cope

Figure 3: Example of aggregate daily data, wellbeing



Answer	Count	Notes
Not Good	1	Restless, couldn't switch off
Below Average	8	Poor sleep quality, mostly sedentary and sitting, work up early
Ok	13	Too hot, low sleep quality, late to bed, anxious, bad dreams, mindless eating, low energy levels, dissatisfaction at work, lacking control over my health, feeling unhealthy, mostly sedentary and sitting, lacking confidence around coping
Pretty Good	50	Thoughtful eating, supportive management, positive home environment, positive mental wellbeing, feeling healthy, being active, high sleep quality, satisfaction through work, in control of my health, ability to cope, productive at work, high energy levels, silent night, comfy bed, no pain, undisturbed
Fantastic	39	Feeling healthy, high sleep quality, high energy levels, positive mental wellbeing, positive home environment, being active, in control of my health, ability to cope, supportive management, productive at work, thoughtful eating, satisfaction through work, gratitude, comfy bed, no stress, no pain, relaxed, content silent night, undisturbed, no distractions, exhausted, early night, deep sleep, new sheets, happy, shower, positive dreams

Figure 4: Example of aggregate daily data, sleep quality

Competitions for wellness-related prizes were correlated with higher engagement rates, number of engaged users, and number of steps (Table II). The presence of competitions was correlated with the overall percentage of user engagement (r = 0.53, p<.001), number of engaged users (r = 0.53, p<.001), and number of steps (r = 0.49, p<.001). During active challenges, the rate of engagement (13%) and daily engaged users (n = 43) were significantly higher than in non-competition periods (2% and n = 23, respectively), possibly indicating competitions with wellness prizes can be an effective strategy to promote engagement with wellness programmes.

Table II: Correlation between engagement, steps, and presence of wellness challenge/prize

Study variables	Pearson Correlation	*p*
% Overall engagement - Challenge and prize together	0.53	<0.001
No. overall engaged users - Challenge and prize together	0.53	<0.001
No. steps daily total - Challenge and prize together	0.49	<0.001
P3 % Overall engagement - Challenge and prize together	0.55	<0.001
P2 % Overall engagement - Challenge and prize together	0.49	<0.001
P1 % Overall engagement - Challenge and prize together	0.47	<0.001
P3 No. Overall engaged users - Challenge and prize together	0.46	<0.001
P2 No. Overall engaged users - Challenge and prize together	0.44	<0.001
P2 No. Overall engaged users - Challenge and prize together	0.46	<0.001
FS % Overall engagement - Challenge and prize together	0.29	<0.001
FS No. Overall engaged users - Challenge and prize together	0.28	<0.001
No. Steps daily per engaged user - Challenge and prize together	-0.13	<0.05
% Overall engagement - Steps per engaged	-0.16	<0.05

FS: faculty and staff; No.: number; P3: third year pharmacy student; P2: second year pharmacy student; P1: first year pharmacy student

Despite the relationship between prizes offered and app engagement, it is noteworthy that a negative relationship between the two was found. Engaged users were more likely to take fewer steps when challenges were active (r = -0.13, p<.05), and engagement rates were associated with lower step counts per engaged user (r = -0.16, p<.05) during active challenges. This finding most likely indicates that participants used the app daily to ensure entry into the content but did not necessarily engage in more physical activity and was only found in the non-step count related challenges.

Discussion

As demonstrated with Wellspace in this school of pharmacy, mHealth apps are often beset with low user adherence and retention rates that impede their potential impact (Lau *et al.,* 2020). The initial interest in Wellspace was largely successful, with the majority of faculty, staff and students creating accounts. However, utilisation was never optimised and consistently declined throughout the academic year. Much of the meaningful data provided by Wellspace, such as daily well-being checks, could not be assessed due to such low user input. The most meaningful data were captured during challenges that offered wellness prizes, such as standing desks, weight sets, yoga mats, and university athletic gear.

Despite a growing number of mHealth apps other than Wellspace, such as Headspace, Inc, Moodnotes(R), eMoods, and Daylio, evidence to support their use for mental health outcomes is limited. A recent review of 1009 psychosocial wellness and stress management apps found that only 2.08% (21/1009) of apps were supported by randomised controlled trials (Lau *et al.,* 2020). Only 16 apps reported efficacy outcomes, with all 16 apps demonstrating improved psychosocial outcomes over time. However, about half of the efficacy studies lacked randomisation or active treatment comparisons, while the majority were not powered for analysis of outcomes (Lau *et al.,* 2020).

Limitations

This pilot project has several limitations. First, there was no control group because all the members of the school of pharmacy had access to Wellspace. Second, the study population was small. Finally, there were limited demographic data available for evaluation, given the anonymity maintained by the app.

For professional programmes considering the integration of mHealth, there are a few suggestions to increase successful integration and engagement. The fee of the app may be cost-prohibitive and can vary by size of population within the school and desired features. Funding should be designated for user subscriptions. Additionally, it is imperative to have dedicated personnel to create and manage challenges, analyse the aggregate data, and provide constant promotion to faculty, students, and staff. Beyond

designated well-being administrators and advocates, having the buy-in of all faculty and staff is likely an essential component for students to recognise well-being and use of wellness tools as a necessity.

Conclusion

Although there is enthusiasm to incorporate mHealth into schools of pharmacy, specific strategies have not been established with maintainable long-term personal health and wellness goals. While mHealth applications may be deemed favourable for pharmacy schools today as many pharmacy students rely on technology, a strategic plan, with funding and personnel, is warranted to successfully integrate and glean meaningful information.

Conflict of interest

The authors declare no conflict of interest.

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