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Instant messaging and nursing students' clinical learning experience

Abstract

Background: Although learning in clinical settings is a key element of nursing education, for many learners these are challenging developmental contexts often marked by isolation and a lack of belongingness. Despite the massive appropriation of mobile instant messaging (MIM) platforms and the connectional properties attendant to them, very little is known about their role in and impact on nursing students' clinical learning experiences.

Approach and Methods: To address this gap, the study, which was part of a multinational research project on the use of mobile social media in health professions education in developing countries, examined the use of the instant messaging platform WhatsApp by nursing students during placements and potential associations with socio-professional indicators. The survey involved a total number of 196 nursing students from 5 schools in Oyo State, Nigeria.

Results: The findings suggest that students used WhatsApp relatively frequently during placements and they perceived that this platform enhanced their communication with other students and nurses. WhatsApp use during placements was positively associated with students' maintained social capital with peer students, the development of a professional identity, placement satisfaction and with reduced feelings of isolation from professional communities. The determinants that influenced WhatsApp use during placements were perceived usefulness and perceived ease of use. No associations were found between WhatsApp use during placement and age, attitude, subjective norms and placement duration.

Conclusion: This study is one of the first of its kind that points to the relevance of mobile instant messaging as part of nursing students' (inter-)personal learning environments in clinical settings and, particularly, in the development setting under investigation. Further research is needed to corroborate these findings, to enhance the understanding of the impact mechanisms, and to evaluate a more systematic use of MIM in clinical learning contexts.

Key words: Instant messaging; text messaging; mobile learning; personal learning environment; social media; social capital; Education, Nursing; preceptorship

1 Introduction

1.1 Using mobile and social media in clinical learning settings

Learning in clinical environments is widely conceived to be a key element of nursing education because it acts as a main route for nursing students to immerse into a professional community (Papp et al., 2003). Yet, unsatisfactory clinical placements are a main cause for attrition and dropouts from nursing education programmes (Eick et al., 2012). Students' clinical learning experience is often characterised by high levels of uncertainty (Killam and Heerschap, 2013), a lack of support (Eick et al., 2012) and poor relationships with educators and staff (Killam and Heerschap, 2013). These dynamics can amount to increased feelings of alienation (Levett-Jones et al., 2009) and a restricted sense of belonging (Levett-Jones and Lathlean, 2008), which is further compounded by the learners' isolation from peers and families (Killam et al., 2010).

Against this backdrop, a number of recent studies emphasise the use of digital media to impact positively on nursing students' placement experiences. In particular the adoption of mobile and social media, which are increasingly forming part of nursing student's personal learning environments (Chipps et al., 2015; Pimmer et al., 2014), has shown to influence clinical learning experiences. A recent review on the use of mobile devices during placements indicates that digital mobile devices can be a valuable tool to strengthen interaction among peers and between peers and students and can alleviate students' isolation (Strandell-Laine et al., 2015). Similar outcomes have been linked to the use of social media and web 2.0 technologies during placements. A review states that web 2.0 technologies are suited as a clinical training tool in nursing education with the main advantages being the support of peer and student-teacher communication (Arrigoni et al., 2016). One of the very few larger-scale studies found positive correlations between nursing students' adoption and informal use of social media and their personal and group resilience during placements. This association was explained with the capability of social media to create and maintain social relationships and to serve as a resource for feedback and emotional support in stressful circumstances of clinical learning practice (Sigalit et al., 2017).

1.2 The educational role of mobile instant messaging

A considerable number of systematic reviews underscores the dominant role of social media and particularly of Facebook in the educational research landscape (e. g., Manca and Ranieri, 2013). In contrast, much less attention has been paid to Mobile Instant Messaging (MIM). This is a phenomenon, which, in terms of adoption patterns, is by no means less impressive. For example, WhatsApp alone accounts for a number more than 1 billion people who share 55 billion messages every single day (WhatsApp Blog, 2017).

Mobile instant messaging platforms integrate some of the qualities of mobile and social media and thus have become emblematic for the increasing levels of media convergence, which can be also leveraged in health care work (Pimmer and Tulenko, 2016). Pictorial and textual profile information, status messages and lists of friends and acquaintances are characteristic features of social network sites, whereas instant forms of text-based communication fostered by a range of notification mechanism resemble mobile and SMS-based interaction patterns. The success of MIM has to be understood in the light of everyday meanings of messaging practices, which are deeply rooted in the

users' life worlds. It helps them to co-construct togetherness and closeness through "*small, continuous traces of narrative, of tellings and* tidbits, noticings and thoughts, shared images and lingering pauses" (O'Hara et al., 2014).

In education settings, a study on the use of instant messaging in higher education settings revealed that undergraduates used these tools to develop supportive peer study structures. The tool supported students' bonding and helped them sustain and develop personal relationships, trust and zones of intimacy across geographical and temporal boundaries (Timmis, 2012). In healthcare education, studies are still very rare: A small-scale research in the UK in which WhatsApp groups were implemented to support Problem Based Learning (PBL) of British medical students during a clinical placement found that the tool lent itself well to support the coordination of the groups, fostered learning, and allowed for an enhanced social presence among the participants (Raiman et al., 2017). Another small, qualitative study found that moderated WhatsApp groups helped South African nursing in the integration of theory and practice in a primary health care module (Willemse, 2015).

To conclude, despite the massive adoption and the inherent communicative and connectivist qualities of MIM, little is known about their affordances to support nursing students in clinical learning situations, i.e., in contexts which are often characterised by significant levels of uncertainty and isolation and a lack of belongingness. In addition, there is also a gap on the determinants which influence students' use of WhatsApp during clinical learning.

2 Approach and methods

2.1 Research goal and questions

Against this backdrop, this study aimed to investigate the use of WhatsApp and its correlation with a number of socio-professional indicators. The research questions were described as:

> *What is the association between students' WhatsApp use during placements and (1) the social capital they manage to maintain through their connections with friends and colleagues from their school; (2) their feelings of professional isolation; (3) their perceived professional identity; (4) their satisfaction with the placement.*

A second dimension included the measurement of influencing factors that would potentially impact the intensity of the use of WhatsApp during placements. The questions on the determinants on the use of WhatsApp in clinical learning situations were formulated as follows:

> *Can the use of WhatsApp during placements be associated with (5) perceived usefulness; (6) perceived ease of use; (7) attitude; (8) subjective norms, (9) age and (10) placement duration*

2.2 Measures

To address the RQs, several measures were included in the questionnaire. Unless stated otherwise, all measures consisted of five-point Likert-type scales ranging from Strongly Disagree to Strongly Agree.

WhatsApp use: In measuring the intensity of the use of WhatsApp an approach of Cho (2014) from a study on the use of social network sites was adopted. The participants were requested to differentiate the extent to which they write and read digital contributions. These two measures were then combined into a single measure ($\alpha = .78$). The general use of WhatsApp by nursing students was measured in the

same way – but it referred to the participants' use of the platform in the last week instead of during the placement (α = .71).

Social capital: Social capital is a highly popular and broadly used construct in social sciences. In the field of nursing it has been tied, inter alia, to lifelong learning (Gopee, 2002). Also digital engagement, for example Facebook use, can contribute to the development and maintenance of social capital, (Ellison et al., 2007). To measure social capital amongst peer students, a shortened version of William's (2006) validated social capital scale was used, which was also applied by Ellison et al. (2007) and which is suited to capture online and offline social capital. We included six items, which were adapted to the specific context that the nursing students experience in placements. (α =.81)

Isolation from the professional community: In contrast to social capital, which was used in this study to measure relationships with peer students, professional isolation served as a construct that related to an individual's perceived disconnect towards the wider professional community. To measure the degree of isolation of students from their professional communities, a shortened version of the revised UCLA Loneliness Scale was used (Russel et al., 1980). The questions were adapted to the particular research context, i.e., to evaluate nursing students' levels of professional isolation as a result from the perceived separation from the professional community including professionals and other students. The construct used in the study consisted of four items and showed a satisfactory internal consistency with Cronbach Alpha = .73.

Professional identity: Professional identity is one specific form of social identity, which relates to the extent to which people feel that they belong not only to a workplace but to a specific professional community (Adams et al., 2006). The underlying question was thus whether potentially higher levels of connectedness, as enabled through the use of WhatsApp during placements, would also impact on nursing students' feelings of belongingness and professional identification. Identity development was measured using a shortened and contextualised version (3 items) of the professional identity scale of Adams et al. (2006) which showed excellent internal consistency (α = .85).

Placement satisfaction: Similar to a previous study on placement satisfaction of nursing students (Carless et al., 2012), a measure for overall job satisfaction was taken and, the term "job" was replaced by "clinical posting" (the term used in Nigerian nursing contexts for placement). Because single-item measures of overall job satisfaction were found to be acceptable (Scarpello and Campbell, 1983), the question "Overall, how satisfied have you been with your last clinical posting?'' was used and evaluated on a five-point scale ranging from very dissatisfied to very satisfied.

Determinants of WhatsApp use: This study was guided by approaches and prior findings borrowed from studies on the Technology Acceptance Model (TAM), an extremely widely used model to understand factors that impact on the adoption of technology. Its core constructs are perceived ease of use and perceived usefulness.

Perceived usefulness measures the extent to which people believe that a certain system or technology will help them to do a job better (Davis, 1989). In this study, the questions about perceived usefulness were specifically geared towards participants' perceived value of WhatsApp to enhance their communication with other students and nurses. To do so, three items were taken and adapted from the study of Malhotra and Galletta (1999). Internal consistency of the scale was excellent (α = .90).

Perceived ease of use captures the degree to which a person believes that the use of a particular system would be free of effort. (Davis, 1989). Ease of use was measured using 4 items from Cowen's

(2009) evaluation of a clinicians' use of an information system. Internal consistency was low (α = .63). However, none of the items could be removed to increase Alpha.

Another factor in the TAM model relates to a person's **attitude** towards the use of a particular system, i.e. the extent to which s/he has a favourable or unfavourable evaluation or appraisal of the behaviour (Ajzen, 1991). To measure the nursing students' attitude towards WhatsApp, the attitude scale that Park (2009) validated in his research on an e-learning system was used and adapted to the context of this study. One item ("Studying through e-learning is a wise idea") was found to be poorly understood in the linguistic context of the study and was thus replaced by a reversed item borrowed from the scale of (Rosen et al., 2013). Internal consistency of attitude measured by the 3 items was unsatisfactory (α = .58).

The TAM model has been later extended to account for social influences in the adoption and utilization of new information systems (Malhotra and Galletta, 1999), particularly with regard to the construct of "**subjective norms**" (Schepers and Wetzels, 2007): "a person's perception that most people who are important to him think he should or should not perform the behavior in question'' (Fishbein et al. (1977) as cited in Schepers and Wetzels (2007). In the study at hand, subjective norms were measured with 4 items adapted from Cowen (2009). The questions were adapted to the context: it was asked to what extent close friends, work colleagues, peers and people who are of general importance to the respondent think s/he should use WhatsApp. Cronbach's alpha of these 4 items was excellent. (α = .94).

In addition, personal characteristics including **gender and age**, which have been found also to be determinants of the intention in the use of mobile technology for learning in TAM studies (Wang et al., 2009), were also included. Also the length of the placement was measured to determine whether, for example due to a better integration into the workplace over time, WhatsApp would be regarded as less useful during longer placements.

2.3 Recruitment of participants, data gathering and ethical approval

The questionnaire was administered to final year students in five Schools of Nursing in South-West, Nigeria. The University of Ibadan/University College Hospital's Ethics Review Committee provided approval for the study protocol. The research team visited each school, where the students were informed about the goal and procedures of the study. Upon the provision of the written informed consent form the students filled in a paper-based questionnaire. The answers to the questionnaires were digitized and analysed using the statistical software R. The participant sample can be described as follows: Nursing students (N = 196, 25 men and 171 women) from the five nursing schools volunteered to participate in the study. Their age was ranging from 19 to 39 years (M = 22.35, SD = 2.96, Mdn = 22). A vast majority (n = 194) were in a clinical posting in the year of the study (in 2016). The duration of the last posting ranged from 1 to 13 months (M = 5.37 months, SD = 2.65, Mdn = 4). Two participants did not answer this question, and one participant was still in her/his posting. The location of their clinical posting was primarily urban (n = 158, 80.6 %), followed by rural (n = 15, 7.7 %), township/agglomeration (n=12, 6.1 %) and peri-urban (n= 10, 5,1%). One person did not indicate the location (0.5 %). One hundred and eighty one participants (92.3 %) completed their posting in a hospital, nine people at a health post (4.6 %), and six people at a health centre (3.1 %).

3 Findings

3.1 Descriptive statistics

What can be seen from Table 1 is that the nursing students used WhatsApp relatively frequently, with the majority reporting that they wrote and read many messages on WhatsApp during their placement (Mean=3.60; SD=1.14) and even more in general (Mean=4.16; SD=0.95). They also reported relatively high levels of social capital, identity development and placement satisfaction, and considerably lower levels of professional isolation. The four proposed determinants of WhatsApp use, i.e., ease of use, attitude, usefulness, and subjective norms were all positioned on the higher end of the scale. Perhaps most remarkable is perceived usefulness, i.e., the value that participants attribute to WhatsApp as a means to enhance their communication with other students and nurses, which was the most highly rated construct (Mean=4.51; SD=0.59).

Table 1: Descriptive statistics

Measure	N	Mean	SD	Median	Range
WhatsApp use placement	195	3.60	1.14	4	1-5
WhatsApp use in general	194	4.16	0.95	4.25	1-5
Social capital	196	3.92	0.73	4	1-5
Professional isolation	190	2.15	0.78	2	1-4.75
Professional identity	192	4.04	0.80	4	1-5
Placement satisfaction	196	4.03	0.87	4	1-5
Placement duration (weeks)	193	5.37	2.65	4	1-13
Age (years)	195	22.35	2.96	22	19-39
Ease of use	195	4.3	0.69	4.5	2-5
Attitude	193	4.33	0.66	4.33	2.33-5
Usefulness	195	4.51	0.59	4.67	2-5
Subjective Norms	194	4.34	0.66	4.25	1.75-5.25

Note. Number of observations differs between variables due to missing values.

3.2 WhatsApp use and socio-professional indicators

The investigated measures were not normally distributed and thus analysed using robust Kendall's rank correlation. The analyses reveal that the use of WhatsApp by nursing students during their placements can be associated with all the other measures, most strongly with social capital that nursing students maintain through their connections with friends and colleagues from their school. (.25, $p < .001$). Positive correlations were also found between the nursing students' WhatsApp use during placement and their professional identity (.21, $p < .01$) and even their placement satisfaction (.17, $p < .05$). In contrast, negative associations were identified between WhatsApp use during placement and the students' feelings of professional isolation (-.18, $p < .05$), indicating that the more they used WhatsApp the less professionally isolated they felt during placements. The particular linkage between WhatsApp use during placements and these measures is further underpinned by the fact that, although WhatsApp use during placement and general WhatsApp use were positively correlated, the general use of WhatsApp did neither correlate with professional isolation and professional identity nor with placement satisfaction.

Table 2: Correlations of measures

Variables	1	2	3	4	5	6	7	8	9	10	11
1. WhatsApp use during placement	-										
2. WhatsApp use (general)	.39***	-									
Socio-professional measures											
3. Social capital	.25***	.22**	-								
4. Professional Isolation	-.18*	-.09	-.23**	-							
5. Professional identity	.21**	.09	.28***	-.12	-						
6. Placement satisfaction	.17*	.14	.17*	-.22**	.25***	-					
Determinants of WhatsApp use											
7. Placement duration	0.04	0.06	0.15*	-0.07	-0.05	-0.07	-				
8. Ease of use	.18*	.28***	.17*	-.08	.06	.05	0.03	-			
9. Attitude	.12	.19**	.18*	-.12	.15*	.14	-0.04	.43***	-		
10. Usefulness	.23**	.23**	.28***	-.20**	.21**	.08	-0.03	.37***	.38***	-	
11. Subjective Norms	.13	.17*	.19**	-.13	.18*	.07	-0.09	.37***	.41***	.56	-
12. Age	-.09	-.10	-.07	.03	-.03	-.02	0.07	-.17*	-.06	-.04	-.07

Kendall rank correlation. Missing values were excluded pairwise. Significance levels *p<.05, **p<.01, ***p<.001.

3.3 Determinants of WhatsApp use

As depicted in Table 2, perceived usefulness of WhatsApp as a tool to support the communication with other students and nurses (.23, $p < .01$) and its perceived ease of use (.18, $p < .05$) were both significantly associated with WhatsApp use during the placement and WhatsApp use in general (.23, $p < .01$; .28 $p < .001$, respectively). However, subjective norms and attitude were only significantly correlated with WhatsApp use in general, but not with WhatsApp use during the placement. This finding further emphasises the perceived usefulness of WhatsApp as an essential determinant for its use during the placement. The important role of WhatsApp in placement settings is additionally bolstered by the correlations of perceived usefulness of WhatsApp with social capital (.28, $p < .001$), isolation (-.20 $p < .01$), and identity development (.20, $p < .01$). Although there were not significant correlations of age and WhatsApp use during the placement (and WhatsApp use in general), age was negatively correlated with perceived ease of use (-.17, $p < .05$). This indicates that that older nursing students found WhatsApp slightly more difficult to use, which however, did not appear to affect their actual use.

4 Discussion

The results of this study suggest that, in the contexts observed, WhatsApp is not only relatively frequently used but its perceived usefulness to enhance communication with other students and nurses is highly rated. The finding that WhatsApp is a part of nursing students' personal learning environments alone is a novelty because of the dearth of literature which has reached this conclusion to date. For example, although a very recent multi-site study found that nursing students' personal learning environments were made up of Web 2.0 tools including social networking sites, microblogs, search engines and image and video hosting services and others, no mention was made of instant messaging (Patterson et al., 2017).

The findings also show that the use of WhatsApp is not only highly regarded as a means to enhance the communication with other students and nurses, but its use is tied to socio-professional indicators highly relevant to clinical learning itself. The key qualities of WhatsApp as identified in this study appear to lie in connecting nursing students in clinical learning contexts with significant others including peer students, colleagues and nurses. While these findings corroborate prior research on the potential of mobile communication technology to alleviate isolation during clinical learning episodes (Garrett and Jackson, 2006; Young et al., 2010), this study has specified and quantified these dynamics. More concretely, the results are indicative of the capability of WhatsApp to help students maintain social capital with friends and colleagues, reduce feelings of isolation from professional communities of nurses and other students, and support their development of a professional identity, i.e. their identification with a professional community. Although these relationships remained largely unexplored in prior literature, they partly resonate with the study that linked nursing students' use of social media to personal and group resilience during placements. The explanation that social and practical peer support helped nursing students come to terms in stressful clinical situations during placements (Sigalit et al., 2017) would also apply in the context of this study, in which social media use was additionally associated with learners' sense of connectedness and belongingness to a professional community.

The findings on the determinants of WhatsApp use, i.e., that perceived usefulness and perceived ease of use relate to the actual use of a technology (WhatsApp in the case of this study), confirm a stream of past and recent work centred on the technology acceptance model (Davis, 1989; Venkatesh and Davis, 2000). Interesting are, however, the very high levels of usefulness that nursing students ascribe to WhatsApp as a means to enhance communication with other students and nurses. The specific role and usefulness of WhatsApp is further underpinned by the fact that, although older nursing students tended to find its use significantly more difficult, this perception did not affect their actual use. The generally high ratings of the ease of use resonate with findings from a qualitative study which identified the familiarity of the medical students with WhatsApp and its ease of use as one of the key themes (Raiman et al., 2017).

The observation that associations could be only found between subjective norms and WhatsApp use in general – and not during placements– is more ambiguous. The first relationship resembles the findings of the study of Glass and Li (2010), who determined the relevance of social influence in predicting students' instant messaging adoption. The lacking association between subjective norms and the use of WhatsApp during placements could be perhaps explained by WhatsApp use which is primarily driven by intrinsic personal or practical demands during placements - and to a much lesser

extent by external social influences. However, as the role of subjective norms in the literature is generally mixed and inclusive and was found to depend on the specifics of the setting (Schepers and Wetzels, 2007), more research is clearly needed.

The findings of this study spark a number of practical considerations. The socio-professional benefits associated with mobile instant messaging would speak against restricting students from using these platforms during their placements, which is a subject of widespread debate across different settings (Nursing Times, 2013). However, education and placement institutions need to ensure these tools are used in responsible and sensible ways to minimise potential risks. For example, instant messaging during clinical work would, alongside the use of other mobile functions, distract students from their tasks and may likely result in clinical errors (Gill et al., 2012). In addition, the use of mobiles at the bedside is likely deemed to be disturbing by patients who do not view them as educational or professional tools. In addition to developing guidelines and policies that regulate the use of phones in healthcare work settings (Gill et al., 2012), students need to acquire a set of professional media literacy skills which reaches far beyond technological competencies.

5 Conclusion

This study examined the use of WhatsApp, a massively popular digital communication tool, in the context of clinical nursing education. In contrast to prior work, which has paid very little attention to the adoption of mobile instant messaging by health professionals, this study investigated the use of WhatsApp and associated socio-professional indicators and determinants during students'. The findings reveal the relevance and role of WhatsApp as part of nursing students' personal (and particularly social) learning environments. In addition to the perceived usefulness of WhatsApp to enhance communication with students and nurses, the platforms' connectional qualities were tied to a number of socio-professional indicators. These included social capital, (reduced) professional isolation, professional identity and even placement satisfaction. Arguably, the platforms connectional qualities are of particular relevance in learning settings which are often marked by high levels of alienation, isolation and limited onsite support.

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