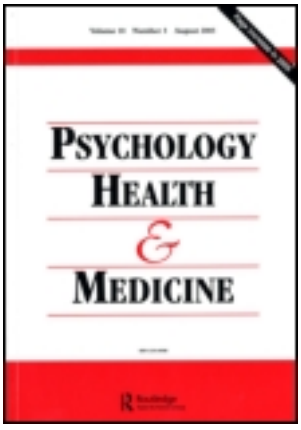

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Social and moral norm differences among Portuguese 1st and 6th year medical students towards their intention to comply with hand hygiene

Magda S. Roberto [a], Kathryn Mearns [b] & Silvia A. Silva [c]

[a] Department of Social and Organisational Psychology, ISCTE-IUL, Lisbon University Institute, Lisbon, Portugal

[b] School of Psychology, University of Aberdeen, Aberdeen, UK

[c] Department of Human Resources and Organisational Behaviour, ISCTE-IUL Bussiness School, Lisbon, Portugal

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Social and moral norm differences among Portuguese 1st and 6th year medical students towards their intention to comply with hand hygiene

Magda S. Roberto[a]*, Kathryn Mearns[b] and Silvia A. Silva[c]

[a]*Department of Social and Organisational Psychology, ISCTE-IUL, Lisbon University Institute, Lisbon, Portugal;* [b]*School of Psychology, University of Aberdeen, Aberdeen, UK;* [c]*Department of Human Resources and Organisational Behaviour, ISCTE-IUL Bussiness School, Lisbon, Portugal*

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This study examines social and moral norms towards the intention to comply with hand hygiene among Portuguese medical students from 1st and 6th years ($N = 175$; 121 from the 1st year, 54 from the 6th year). The study extended the Theory of Planned Behaviour theoretical principles and hypothesised that both subjective and moral norms will be the best predictors of 1st and 6th year medical students' intention to comply with hand hygiene; however, these predictors ability to explain intention variance will change according to medical students' school year. Results indicated that the subjective norm, whose referent focuses on professors, is a relevant predictor of 1st year medical students' intention, while the subjective norm that emphasises the relevance of colleagues predicts the intentions of medical students from the 6th year. In terms of the moral norm, 6th year students' intention is better predicted by a norm that interferes with compliance; whereas intentions from 1st year students are better predicted by a norm that favours compliance. Implications of the findings highlight the importance of role models and mentors as key factors in teaching hand hygiene in medical undergraduate curricula.

Keywords: moral norms; subjective norms; role models; hand hygiene compliance; Theory of Planned Behaviour; medical students

Introduction

Education is a crucial tool to fight hospital-acquired infections, since it has the ability to prepare future healthcare professionals (HCPs) by providing them strategies to reinforce patient safety and enhance the role of infection control inside healthcare facilities (Center for Disease Control [CDC], 2003). Infection control literature results have shown that being a doctor is considered a risk-factor for non-compliance because doctors are the professional group with lowest compliance rates (CDC, 2002; Mortel, Apostolopoulou, & Petrikkos, 2010). In the particular case of medical students, the importance of hand hygiene must be taught from the first year and integrated into their clinical curricula as students are continuously included in health activities involving patients throughout medical school (Duroy & Coutour, 2010).

By taking that premise into account, Mortel et al. (2010) developed a study to evaluate hand hygiene education during undergraduate training and compared

*Corresponding author. Email: magda.sofia.roberto@gmail.com

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nursing and medical students' behaviours upon entering the workforce. Results indicated that nursing students have more knowledge about hand hygiene as well as more positive beliefs and practices towards this procedure than medical students. Also, Mortel et al. (2010) determined that nursing students considered that hand hygiene was more important in their nursing curricula as an infection control subject than medical students. In fact, medical students considered that this type of subject had little impact in their knowledge and beliefs which decreased their ability to comply (Mortel et al., 2010).

According to Apisarnthanarak, Babcook, and Fraser (2006) medical students' decisions to comply were constrained by several factors. For instance, students reported that they do not always consider that they need to comply with the recommended procedures not only because they personally underestimated some risks but also because other colleagues acted in similar ways. In fact, Lankford et al. (2003) concluded that medical students were less likely to comply with hand hygiene if a peer or a higher ranking person was seen as a non-complier suggesting that a role model's behaviour may negatively influence compliance and enhance the impact of peer and group behaviours, which emphasises the power of social influence processes (e.g. Feather, Stone, Wessier, Boursicot, & Pratt, 2000).

Previous research has also established that HCPs' compliance with hand hygiene, particularly among doctors, can be connected with internalised moral concerns (e.g. Godin, Bélanger-Gravel, Eccles, & Grimshaw, 2008; Lymer, Richter, & Isaksson, 2004; Roberto & Silva, 2007). Duroy and Coutour's (2010) results suggest the possibility of these moral concerns appear in the early stages of medical students' education, a factor which may later contribute to the development of internalised moral beliefs that may interfere with hand hygiene compliance. Until the development of our study this was only a theoretical conjecture. To that end, non-compliance may be perceived as a way to justify a recognisable deviant behaviour, which is not performed in order to ensure that supra-moral values are not being placed at risk. By doing so it's highlighted the possibility of these medical students having multi-faceted moral motivations that according to their sense of doing what is right will be activated to explain their behavioural intention (e.g. Bell, Trevino, Atkinson, & Carlson, 2003; Jeanes, 2003).

Literature focusing on this topic is limited. Most studies have been directed to HCPs and have underestimated the role that students also have on infection control as future HCPs (CDC, 2003). Recent studies have identified the importance of role models as referents for medical students' behaviours; however, few have examined who would be the best role models to persuade medical students to comply. Also, the role of internalised norms such as moral norms has not been well examined in the field of medical students' hand hygiene compliance. The current research literature has not explored the possibility of these norms expressing a multi-faceted influence on non-compliance and appearing during medical school education. Furthermore, to our knowledge none of the existing studies focusing on medical students' hand hygiene compliance has applied the Theory of Planned Behaviour (TPB) (Ajzen, 1988) to explore how their intention can be predicted according to distinct stages of students' academic training. In this regard, little is known about the impact that attitudes, subjective norm and perceived behavioural control (PBC) have on medical students' intention to comply with hand hygiene across medical school years.

Therefore, the general purpose of the study is to investigate the multiple components of the TPB for the prediction of medical students' intention to comply

with hand hygiene. The study explores an extended application of the TPB with additional predictors being included in the normative component to better explore the role of subjective and moral norms. The aim is to test whether different social referents and moral norms emphases are able to predict medical students' intentions. The study examines these predictive differences with two medical students' samples from distinct years (1st and 6th years) based on the idea that medical students from different medical school years report distinctions in their long-term knowledge and behaviour regarding compliance and infection control procedures (e.g. Amorim-Finzi, Cury, Costa, Santos, & Melo, 2010; Calabro, Bright, & Kouzakanani, 2000). It can therefore be assumed that differences in knowledge and behaviour can be related to a distinctive predictive role given to behavioural intention predictors across medical school years.

Since medical students will be the future practitioners of healthcare organisations, it is important to study their intention to comply with hand hygiene. First, it will allow assessing their knowledge and perceptions (Kampf, 2004); secondly, it will contribute to explore the need of including more formal teaching of infection control in medical curricula (Duroy & Coutour, 2010) .

Theory of Planned Behaviour

The TPB is a socio-cognitive perspective based upon expectancy-value models and arises from the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1980). This first proposal determines how attitudes, subjective norm and intention are combined to predict behaviour. Individual behaviour will be best predicted by intention. Thus, the intention will reflect the personal motivation to perform the behaviour (Ajzen, 1991).

According to the TRA, intention will be determined by two factors: the attitudes that the individual has towards the behaviour and the subjective norm, or perceived social pressure to perform the behaviour (or not). Attitudes will be the product of a set of salient beliefs related to the consequences of performing the behaviour. Each of these beliefs has a specific weight that will be determined by the personal evaluation of the behavioural consequences. On the other hand, the subjective norm will result from the normative beliefs that the individual has, given the social pressure exerted by relevant others, balanced by his or her personal motivation to comply with that perceived pressure (Fishbein & Ajzen, 1980).

One of the problems of the TRA was reported by Ajzen (1988) who determined that this approach only reflected behaviour under volitional control. So, departing from contributions of self-efficacy literature (Bandura, 1986), Ajzen (1988) expanded the TRA by adding a new construct, PBC, which refers to the perception that the individual has that he or she can perform the behaviour. According to Ajzen (1988), PBC predicts intention when the individual perception of control accurately reflects personal control towards behaviour and is determined by control beliefs.

Method

Hypotheses

Behavioural intention predictors of medical students from the 1st and the 6th year will be compared in order to analyse an extended applicability of the TPB. Turning to the study's first hypothesis it is expected that the subjective and moral norms,

when compared to attitudes and PBC, will be the best predictors of 1st and 6th year medical students' intention to comply. However, our aim is to analyse different social referents such as professors and colleagues, and different moral emphases, namely the emphasis on hand hygiene and commitment to the patient. By doing that, we expect the ability of these predictors to explain intention variance will change according to medical students' school year.

These hypotheses are supported by the results of several studies that have determined that either the professors or colleagues play a significant role in medical students' compliance behaviours (e.g. Buffet-Bataillon et al., 2010); however, the impact that these social referents might have on medical students may vary because during their training these students are integrated in distinct socialisation stages (e.g. Wright, Wong, & Newill, 1997). For instance, in early stages of medical school curricula professors have a relevant role in disseminating their knowledge, expressing a great influence on students' skills and values (e.g. Schneider et al., 2009). As medical students' progress in their academic training, the impact of other social referents increases, in particular the importance given to colleagues, whose personal practices become highly valued (e.g. Paukert & Richards, 2000). To that end, we expect that the subjective norm, whose referent focuses on professors, to be a relevant predictor of 1st year medical students' intention to comply with hand hygiene; and conversely that the subjective norm, that emphasises the relevance of colleagues, to be a better predictor of intentions of medical students from the 6th year.

In the particular case of the moral norm, literature highlights the importance that hand hygiene has on patient safety as an infection control procedure (CDC, 2003). In this sense, complying with hand hygiene is not only an important safety behaviour but also a moral prerogative that must be taught during academic curricula to protect both patients and future professionals (e.g. Duroy & Coutour, 2010). Nevertheless, literature findings also determine that despite acknowledging the importance of hand hygiene, medical students appear to have other moral concerns that may interfere with compliance, such as giving moral significance to other medical topics related to their clinical practice (e.g. Duroy & Coutour, 2010). Because clinical practice evolves during medical training, and infection control is a topic that is mostly discussed during the 1st year of academic curricula (e.g. Mortel et al., 2010), it is expected that the awareness of the issues that medical students refer to as more relevant than infection control become salient during their training. In this sense, it is expected that intentions from 6th year students will be better predicted by a moral norm that emphasises the significance of their commitment to the patient interfering with compliance; while intentions from 1st year students will be better predicted by a moral norm that gives particular relevance to hand hygiene, favouring compliance.

This study focuses on the impact of norms on the behavioural intention, which is an understudied issue in the field of hand hygiene compliance among medical students. Namely, if our hypotheses are supported by comparing medical students at different socialisation stages, it will be possible to verify how social and internalised norms (e.g. subjective and moral norms, respectively) are acquired and developed illustrating their role to enable and/or inhibit compliance. The confirmation of these hypotheses will reveal that during different socialisation stages medical students change their normative imperatives, which will constitute itself as a significant contribution to the literature since it's not documented yet.

Participants

Participants were 175 undergraduates selected from a Portuguese Medical School. Students were from the 1st ($N = 121$) and 6th ($N = 54$) years. There were 48 male participants and 127 female participants ranging in ages from 18 to 46 (mean age = 20.9 years, median = 19, IQR = 4). All students had infection control training during their academic curricula. Self-report questionnaires were delivered to participants during their classes. At the end of the classes, all questionnaires were collected.

Instrument

Questions covered TPB predictors and socio-demographic questions to characterise the participants. Behavioural intention predictors and intention to comply were measured with items derived from the study of Ajzen, Brown, and Carvahal (2004). *Attitudes* were measured with three items. An item example is "Hand hygiene is a beneficial technique for me and for the patient". The response scale ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.71$). *Subjective Norms* were measured with three items and specified colleagues as social referents: "My colleagues comply with hand hygiene procedures". The response scale ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.72$). Despite measuring the importance of colleagues as social referents these norms also assessed three additional items that focused on the relevance of professors. An item example is "What my Professor consider that I should do about hand hygiene is important to me". The response scale ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.79$).

Perceived behavioural control was also assessed with three items. "I consider that I control hand hygiene technique" is an item example. All items were ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.72$). *Intention* to comply with hand hygiene was measured with three items. An item example is "I intend to comply with hand hygiene in every situation where this procedure is required". All items were ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.73$). Finally, moral norm items were adapted from the work of Biel and Thogersen (2007) and Godin, Conner, and Sheeran (2005) and this construct was assessed with three items emphasising professional commitment towards the patient as a moral prerogative. An item example is "I consider my personal commitment towards the patient more important than hand hygiene". The response scale ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.73$). Three new items were included to measure a different moral emphasis, namely medical students' personal commitment to hygiene. "I consider hand hygiene a personal moral obligation towards the patient" is an item example. The response scale ranged from (1) "Completely Disagree" to (7) "Completely Agree" (Cronbach $\alpha = 0.88$).

Data analysis

A principal component analysis (varimax rotation) was employed to assess the content validity of the seven measures. Extracted components had eigenvalues >1. Results revealed that the 21 items could be reduced to seven factors (Kaiser-Meyer-Olkin (KMO) = 0.74 <0.001) explaining 81% of the variance in the correlation matrix. Descriptive statistics are presented in Table 1.

Table 1. Descriptive statistics 1st year ($N = 121$) and 6th year medical students ($N = 54$).

	Mean	SD	1	2	3	4	5	6
1st year								
1. Attitudes	5.12	0.96						
2. Subjective Norm Colleague	4.64	0.76	0.06					
3. Subjective Norm Professor	4.70	0.92	0.31**	0.04				
4. Moral Norm Patient	5.10	1.12	−0.23*	0.04	0.09			
5. Moral Norm Hygiene	5.76	1.03	0.46**	−0.17	0.42*	−0.02		
6. PBC	5.42	0.82	0.21*	0.05	0.19*	0.15	0.04	
7. Intention	5.35	0.99	0.46**	0.04	0.43**	−0.15	0.44**	0.10
6th year								
1. Attitudes	5.77	1.20						
2. Subjective Norm Colleague	4.88	0.72	−0.08					
3. Subjective Norm Professor	4.03	0.82	0.28*	0.29*				
4. Moral Norm Patient	5.79	0.79	−0.33*	0.41*	−0.05			
5. Moral Norm Hygiene	5.45	0.69	0.08	0.19	0.10	0.13		
6. PBC	5.94	0.65	−0.21	0.34*	−0.13	−0.21*	0.29*	
7. Intention	6.04	0.81	0.39**	0.53**	0.07	0.37**	0.15	0.47*

Note: $^{**}p < 0.001$; $^{*}p < 0.05$.

The impact of the extended TPB in the 1st and 6th year medical students' intentions to comply was assessed by one hierarchical multiple regression which took into account the split file of the sample by medical year. Our purpose was to verify the best behavioural intention predictors of 1st and 6th year medical students. Data was analysed using SPSS 18. Results are presented in the next section.

Results

Medical students' behavioural intention predictors to comply with hand hygiene

When student year membership was taken into account the best behavioural intention predictors for 1st year students were the subjective norm focused on professors as social referents, attitudes and the moral norm emphasising hand hygiene as moral prerogative. This model explained 35% of the variance in intention. Turning to 6th year medical students, their intention to comply was best predicted by the subjective norm focusing on colleagues as social referents, the moral norm emphasising moral commitment towards the patient, PBC and attitudes. In this case, the model explained around 49% of the variance in intention. These results are consistent with the amount of variance explained by the TPB as indicated in a meta-analysis provided by Armitage and Conner (2001). The regressions results are reported in Table 2.

Discussion

The results of the study support our hypotheses by indicating that Portuguese medical students appear to change their social referents and moral prerogatives as they proceed through medical school. This suggests that medical students from the 1st year perceived professors as the most significant role model to disseminate information regarding the importance of hand hygiene, while students from the 6th year focused on colleagues as relevant social referents to model their compliance behaviour. Turning to the role of moral norms, an apparent change was also found

Table 2. Hierarchical multiple regressions coefficients of 1st year ($N = 121$) and 6th year ($N = 54$) medical students' behavioural intention predictors.

TPB predictors	1st Medical year	6th Medical year
Attitudes	0.24*	0.18*
Subjective Norm Colleague	0.09	0.43*
Subjective Norm Professor	0.28*	−0.05
Moral Norm Patient	−0.11	−0.32*
Moral Norm Hygiene	0.22*	0.05
PBC	0.01	0.38*
F	10.22	7.72
R^2	0.35	0.49

Note: $^{**}p < 0.001$; $^{*}p < 0.05$.

according to which year medical students belonged. In their 1st year students supported a moral prerogative that hand hygiene must be seen as a practice that should be applied in routine and invasive procedures to protect the patient from acquiring an infection. However, medical students from the 6th year presented a different moral prerogative that despite acknowledging the importance of hand hygiene gives more relevance to their moral commitment towards the patient, therefore not considering this procedure as the most significant. Despite the fact that hand hygiene is a moral behaviour, the suggestion that moral prerogatives may be multi-faceted contributes to explain why compliance might sometimes turn into non-compliance. We would like to argue that medical curricula needs to promote hand hygiene compliance through the development of mentors, advisors role models and peer supporters that may help medical students during their education and training. In particular, these role models would introduce students to adequate compliance behaviours and positively reinforce their practices. Furthermore, medical curricula should also include courses calling students attention to the fact that health professionals may develop multi-faceted moral norms regarding hand hygiene. Again, role models will be an important tool to provide factual information and improve the misconceptions about infection control and its interconnections with moral norms.

Several limitations must be acknowledged, in particular sample size. Future research should consider using more diverse and larger samples to compare the importance of psychosocial factors underlying medical students' compliance. Furthermore, it is important to acknowledge that both models explained between 35% and 49% of variance, and although this can be considered as low, it is similar with the TPB literature. In fact, because in this study we particularly focused on norms, which are documented as the weakest TPB behavioural intention predictors, these results illustrate relatively robust models, supported primarily by normative pressures. Nonetheless, because not all predictors had a significant predictive role, which also affected the amount of explained variance, it would be interesting in future studies to explore additional predictors.

Also, it is important to establish whether the social referents presented (professors and colleagues) have the same pattern of moral norms. Moreover, it would be important to verify if these different moral norms remain relevant for junior and senior physicians. Nonetheless, despite limitations, this study provides valuable exploratory groundwork in the field of medical students' compliance behaviours.

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