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Risk Behaviour and Attitudes in Medical Professionals

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Abstract

Objective: The objective of this study was threefold. Firstly to assess whether Medical Doctors attitudes towards risk taking significantly differ to those of non-clinical members of staff? Secondly, are there gender dependant differences in risk taking behaviour? And finally, does risk taking attitude change with age?

Design: This was a cross sectional study where a questionnaire including the Risk Taking Index (RTI)was sent to 470 employees of two hospitals and also local general practitioners to assess their risk propensity.

Setting:Milton Keynes University Hospital (District General Hospital), Buckinghamshire Healthcare Trust (District General Hospital)

Results: 130/470 people responded to the survey invitation. Doctors rated themselves as having a greater risk propensity both inside and outside of work compared to non-doctors. Gender group sub-analysis revealed that male doctors rated themselves as significantly greater risk takers inside work compared to their female counterparts (p0.0111).
Sub-group analysis of the Risk-Taking Index demonstrated that males and doctors appeared to score higher both past and present compared to females and non-doctors. When comparing the past versus present scores of the RTI within the separate groups most groups appeared to rate themselves as more risk taking in their past.

Conclusions: Doctors appear to exhibit a greater propensity to risk in comparison to non-medical staff. Females are more risk averse than males, and finally age is inversely correlated with risk propensity. With increased recording and publication of patient-reported and clinical outcome measures clinicians may be becoming more risk averse within work, and at present it is unknown whether the impact of this will be positive or negative.

Introduction

Evaluating risk is an integral aspect in the practise of Medicine. Every clinical decision made, investigation ordered, procedure or intervention performed on a patient is preceded either consciously or unconsciously by a risk evaluation process by a Clinician, whereby the potential to cause harm or injury is balanced against any potential benefit which may be gained. However, to date, there has been a paucity of research into the attitude and behaviours of Medical Professionals towards risk taking in the workplace.

It is well known that an individual's attitude towards risk is multi-faceted, and can be influenced by factors including their socio-economic, educational, cultural, professional, and environmental background1. Furthermore, the concept of risk can be classified into domain-specific risk, dependent upon the perceived hazard, such as physical risks (e.g. accidents, illness) economic risks (e.g. gambling, financial investments)and social risks (smoking, alcohol consumption, diet, sexual behavior, relationships). One study by Rohrmann2 suggested that peoples risk attitude is not generic across these domains, but moreover a person's risk attitude, mind-set and motivation for accepting risk may adapt to the type of hazard to be dealt with. Weber et al3 also suggested that people differ in the way they resolve work-related or personal decisions that involve risk or uncertainty.

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This concept of situational, or domain-specific risk attitude is highly relevant to Clinical Practice, where very often risk assessments are undertaken in time-critical, high pressured, and occasionally unfamiliar situations, where ultimately a patient's health and well-being are at stake. Although a Clinicians assessment of what qualifies as 'acceptable risk' may vary greatly depending upon the context in which it is undertaken, we postulate that there may be fundamental differences in risk attitudes between Clinicians dependent upon their age, gender, and area of specialty. Furthermore, we postulate that risk assessment and behavior may be fundamentally different between Healthcare Professionals and non-clinical members of staff working in Hospitals. For the purpose of this study we have used the following definitions relating to risk behavior, as described by Rohrmann2in his studies into risk perception, attitudes, scales and management.

Risk: The possibility of physical, social, or financial harm/detriment/loss due to a hazard. This is the (dominating) 'negative' perspective; however, there is also a neutral perspective, i.e., risk = uncertainty about the outcomes (good and/or bad ones) of a decision; and a positive perspective, i.e., risk can mean: 'thrill' (danger-induced feelings of excitement)

Risk perception: refers to people's judgments and evaluations of hazards they (or their facilities, or environments) are or might be exposed to. Such perceptions steer decisions about the acceptability of risks and are a core influence on behaviors before, during and after a disaster. People's risk appraisals are a complex result of hazard features and personal philosophies.

Perceived risk magnitude: A person's judgment (opinion, belief) about how large the risk associated with a hazard is (regarding negative outcomes)

Risk attitude: A generic orientation (as a mind-set) towards taking or avoiding a risk when deciding how to proceed in situations with uncertain outcomes. Risk propensity: Attitude towards taking risks; Risk aversion: Attitude towards avoiding risks.

Risk acceptance/refusal: Decisions about how acceptable a risk is in individual or societal terms (in principal or de- facto, i.e., in a concrete situation)

Risk behavior: The actual behavior of people when facing a risk situation

Materials And Methods

The aims of this study are to answer the following questions:

- Are Medical Doctors attitudes towards risk taking significantly different to those of non-clinical members of staff?
- Are there gender dependant differences in risk taking behaviour?
- Does risk taking attitude change with age?

Data Collection

A questionnaire was designed to answer the aforementioned questions. Demographic data including age, gender, job title and seniority of position will be collected. Participants will be asked to assign a word best describing their dominant personality trait relative to risk taking using an 8 point personality risk scale both inside and outside of work, which will generate a score out of 8. Sub-group analysis dependent on age, gender, job role, and seniority will then be undertaken to generate mean values. The main section of the questionnaire will utilise the previously validated Risk Taking Index (RTI)4. The RTI questionnaire is comprised of 6 simple questions asking the respondent to rate how often they undertake risky behaviour within a particular field, which are scored for both current and past attitudes of each individual participant. The response to each question is graded on a 5-point scale from never to very often, therefore providing a score out of 30 for each participant. A higher score is indicative of a greater risk propensity.

Participant Selection

Two National Health Service (NHS) District General Hospital Trusts within the United Kingdom (UK), and a General Practise were chosen for the sample population. All current practising Medical and Non-Medical Healthcare Professionals, and also secretarial/administration staff from these institutions were invited to participate in this study. Dissemination of the questionnaire to all participants was via their trust e-mail address. Online questionnaires were available for completion within a four-week period, and if participants had not completed within this timeframe they were excluded.

Following collection of the individual responses, data was exported to Excel. Statistical analysis was completed using an unpaired t-test and a p value of <0.05 was deemed to be significant.

Results

A total of 470 individuals were invited to participate in this survey. 130 participants (75 Doctors, and 55 non-medical staff) completed the survey giving a response rate of 27.6%.

A summary of their basic demographic information can be seen in table one. The study population was heterogeneous with 75 doctors and a good variety of allied health professionals within the non-doctor group. The subspecialties of the doctors are presented in table 2. The seniority of the doctors is summarised in table 3. Of the 130 respondents; 36 were aged between 21-29, and 94 between 30-39.

The self-description of participants' attitudes to risk both inside and outside of work is summarised in table 4. Doctors rated themselves as having a greater risk propensity both inside and outside of work compared to non-doctors. The self-rating of both doctors and non-doctors risk attitude inside and outside of work was statistically significant ($p<0.0001$; and p0.0192 respectively). Gender group sub-analysis revealed that male doctors rated themselves as significantly greater risk takers inside work compared to their female counterparts (p0.0111).

Scores of the RTI both past and present have been summarised in table 5.Sub-group analysis demonstrated that males and doctors appeared to score higher both past and present compared to females and non-doctors. An unpaired t-test comparing the scores of doctors vs non doctors revealed that doctors scored significantly higher than non doctors ($p=0.036$(past), 0.00259(present). A comparison between males and females was also significant ($p=0.002$(past), 0.0001(present). Although male doctors score higher than their female counterparts in past and present scoring, only the past RTI score was statistically significant ($p=0.0002$, 0.0544 respectively).

When comparing the past versus present scores of the RTI within the separate groups it can be seen from table 5 that most groups appeared to rate themselves as more risk taking in their past. The exceptions to this were doctors; however, on subdividing this group into male and female doctors the male group did have a significant difference between present and past whereas the females did not.

Discussion

The results from our study using the RTI suggest that doctors have a greater propensity for risk than non-medical hospital workers. Overall men exhibited a greater risk propensity than women, and generally risk propensity was inversely correlated to age and experience.

When participants were asked regarding their risk attitudes inside and outside of work it appears that overall people are more risk averse inside work than outside of it. Doctors rated themselves as greater risk takers both inside and outside work compared to non-doctors. Interestingly, male doctors rated themselves as significantly greater risk takers than females inside work. Pikkel et al5 reported that although male Doctors demonstrated higher risk taking behaviour than females, this finding was not statistically significant in their study.Gender differences in risk attitudes have been investigated in several other studies3, 6, 7, 8. A meta-analysis by Byrnes et al6 comparing risk-taking behaviors of men and women in a variety of domains (e.g. financial or health risks) and tasks (e.g. hypothetical choices or self-reported behaviors) found that men exhibited a greater risk propensity overall, although the magnitude of the gender difference varied as a function of domain. Furthermore, a study by Weber et al3 suggested that domain as well as gender differences in risk-taking are as much (or more) a function of differences in risk perception than of differences in attitude towards perceived risk.

The diversity in Clinicians attitudes and behaviours towards risk demonstrated by our results raise several interesting questions. Accepting the need to embrace some risks within work may be of some advantage, however there must be a point at which this becomes reckless and therefore a negative characteristic. It does appear that doctors are relative risk takers in comparison to the general population, therefore is risk propensity a factor inchoosing a career in medicine, or do Doctors become a product of their environment and adapt to taking calculated risks?

Although the process of risk assessment is required to some degree in all faculties of Medicine, the question of whether or not some specialties attract or require Doctors with greater risk propensities than other areas remains an interesting issue.Tubbs et al conducted a systematic review of literature to identify studies evaluating the effects of physicians' risk attitudes, reactions to uncertainty or ambiguity, and personality traits on clinical decision-making9. They concluded that there are very limited data on the extent to which surgical decision-making is linked to risk taking behaviour.A recent study by Pikkel et al5 attempted to define risk-taking behaviour in Medical Professionals using a Game Theory model, where participants were offered financial incentives for predicting the outcome of flipping a coin. In this model risk-taking behaviour was quantified on a scale of 0-10. Overall Physicians within this study did not exhibit risk-taking tendencies, with a mean gamble score of 5.5.

However, Surgeons and Anaesthetists were reported to demonstrate greater risk taking than other physicians (95% CI = 0.83, P<0.05). The Authors speculated that this finding might be due to the more interventional nature and short-term results driven attitude within these specialties. The findings of this study are, however, limited by a relatively small sample of participants (62 total, 36 male; 26 female). A study by McGreevy et al10describes a distinct 'surgical personality' in comparison to that of the general population. Within this study of 39 surgical residents in the US, higher rates of extraversion, openness and conscientiousness were reported in comparison to general public using the revised NEO personality inventory (Psychological Resources, Inc). Gargan et al11attempted to develop and validate a risk taking assessment tool for use in a Surgical Training Selection process. In this prospective, cross-cultural, multi-centre, observational study, a cohort of 400 Medical Students, Junior 'Trainee' Doctors, and Surgical Consultants were compared against 100 non-medical personnel. Risk propensity was assessed using two indices: The Gargan-Conneely Score (GCS), and the Holtgrave Continuous and Categorical Questionnaire on Risk-Taking (HCQ). The results suggest that Surgeons were greater risk takers than the general population. Furthermore, Surgeons were less risk averse than Physicians, men more prone to risk than women, and risk propensity decreased with increasing age. These findings are in line with the results of our study. Interestingly, Gargan et al11 also reported that within the broader surgical field, Orthopaedic and General Surgeons exhibited a higher risk-taking propensity than other specialties. A small pilot study by Contessa et al12 attempted to assess the association between surgeon personality factors (measured by the Myers-Briggs Type Indicator personality inventory (MBTI®) and risk tolerance (measured by the Revised Physicians' Reactions to Uncertainty (PRU) and Physician Risk Attitude (PRA) scales). They concluded that in certain areas of risk assessment, it appears that surgeons with personality factors E (Extravert), T (Thinking), and P (Perception) demonstrated higher tolerance for risk. Conversely, surgeons with personality factors I (Introvert), F (Feeling), and J (Judgment) suggest risk aversion on these same measures. Within the confines of this study, insufficient numbers of responses across a variety of specialties were obtained in order to formulate any statistical correlations between risk taking behaviours and Medical/Surgical specialty.

The acute nature of work within Surgery and Anaesthesiology is often not experienced to the same degree in other Medical specialities, where decision-making is not necessarily as time-dependent. In such specialties, Doctors may have time to order further investigations, gather information, and reflect upon any possible decisions in order to reduce uncertainty and risk before initiating any definitive treatment. In clinical practise, the 'threshold approach to clinical decision making' seems to be both logical and pragmatic when undertaking risk assessment13. Paukker and Kassirer13 describe a 'test threshold' and 'test-treatment threshold' to help explain Doctors behaviors and attitudes towards risk in clinical decision-making. They suggest that treatment should be withheld or postponed if the probability of disease is smaller than the testing threshold, and treatment should be given without further testing if the probability of disease is greater than the test-treatment threshold. The 'test' should be performed (with treatment depending on the test outcome) only if the probability of disease is between the two thresholds. Essentially if the probability of a patient having a specific condition is high, then the risk of subjecting them to further investigations is higher than proceeding directly with treatment, however if uncertainty exists in a particular diagnosis, then further investigations may be justified in order to establish a firm diagnosis before proceeding with treatment, especially if the treatment options entail inherent risk.

Using the results from the RTI it appears that overall people become more risk averse as they get older, interestingly female doctors did not display this characteristic and although their present RTI score was greater than their past it was not statistically significant. Pikkel et al5also reported that senior doctors tend to gamble less than their junior counterparts. The authors in this study reported a significant negative correlation between risk taking with both seniority and age in Medical Professionals (95% CI, P<0.001).

There are several limitations to this study. Firstly the response rate for the questionnaire was 27.6%, which is low but a common problem associated with questionnaire based research, particularly when distributed by e-mail. We did not offer any financial or other incentives for participation in this study, which may have resulted in a lower than average response rate.The multi-dimensional nature of risk has meant that methods for studying and observing its effects have varied within and across paradigms and disciplines14. No single instrument or scale to measure risk propensity or aversion has been validated across all situations or population cohorts2. In this study we have chosen to use the Risk Taking Index (RTI) questionnaire, which is a validated questionnaire used to assess risk-taking behaviour. The vast majority of research into the field of risk taking has previously been carried out on workers within the financial sector rather than the health sector. Although a total of 130 respondents has allowed observations regarding doctors and non doctors it was not appropriate to compare sub specialties within medicine, as this would have been underpowered.

Conclusion

In conclusion doctors appear to exhibit a greater propensity to risk in comparison to non-medical staff. Females are more risk averse than males, and finally age is inversely correlated with risk propensity. It is important to note that risk propensity does not necessarily relate to recklessness and risk taking may be advantageous in certain specialties. With increased recording and publication of patient-reported and clinical outcome measures clinicians may be becoming more risk averse within work, and at present it is unknown whether the impact of this will be positive or negative.

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APPENDIX

Table 1. A summary of the job description for all participants

Job description	Doctor	Health care assistant	Nurse	Pharmacist	Physiotherapist	Radiographer	Receptionist	Lab worker	Non clinical
Frequency	75	6	9	1	3	2	2	2	19

Table 2. A summary of the subspecialties for all medical respondents

Sub specialty	General Surgery	Trauma and Orthopaedics	Medicine	General Practice	Paediatrics	Anaesthetics	Obs and Gynae	ED
Frequency	5	10	17	8	4	9	2	3

Table 3. A summary of the seniority within the doctor correspondents

Seniority	FY1	FY2	Core Training	GPST	ST3+	SAS	Consultant	GP
Frequency	2	9	11	8	14	6	19	6

Table 5. Results for the RTI and results of unpaired t-testing

	Past			Present			Past vs Present analysis
Group	Mean	SD	p value	Mean	SD	p value	p value
Male	14.34146	3.54277	**0.0001**	12.26829	4.269718	**0.0001**	**0.0191**
Female	11.06742	2.551862		10.25843	2.873985		**0.0486**
Doctor	12.68	3.887471	**0.036**	11.57333	3.325468	**0.0025**	0.0630
Non	11.30909	3.282235		9.963636	2.309109		**0.0144**
Doctor Male	14.85002	4.430891	**0.0002**	12.38235	3.821904	**0.0544**	**0.0166**
Doctor Female	11.53659	2.967301		10.90244	2.7185		0.3160
Doctor							

Table 4. Summary table of results for self rating risk attitudes both inside and outside of work

Group	Inside/Outside of work	n	mean	SD
Doctor	Inside	75	3.106	1.2365
	Outside		4.093	1.6779
NonDoctor	Inside	55	3	1.2885
	Outside		3.65	1.566
MaleDoctor	Inside	34	3.5	1.1078
	Outside		4.38	1.2556
FemaleDoctor	Inside	41	2.78	1.2552
	Outside		4.46	1.9437