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Seminar Paper on Narrowing the Communication Gap between Clinicians and Radiologists

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Abstract:

This paper critically explores on how to narrow the communication gap between clinicians and radiologists by reviewing the literature on the adequacy of the radiology request form as tools of communication. The objectives, purpose of the paper, the general motivation, and the reasons why we need to narrow the communication and research gaps identified. Clinicians order for diagnostic imaging investigations by prescribing or supplying pertinent information on the X-ray request form. The advanced technological breakthroughs in diagnostic imaging require a robust communication environment when ordering investigations and receiving the appropriate results that could aid the diagnosis or treatment of various disorders of patients by doctors. The order for radiological investigations begins with the doctor or clinician prescribing the relevant investigation on an order form that is then relayed electronically to the radiologist or physically taken by the patient to the radiology department for the imaging procedure and interpretation by the radiologist after which the report is relayed back to the referring clinician. In the course of prescription, the clinician has to supply the pertinent patient history to justify the need for the radiation exposure to the patient. Many scholars that have evaluated the completeness of details on the radiology order form by clinicians have encountered glaring lapses that indicate that many clinicians do not supply adequate details to the radiologist on the order form, which creates a communication gap that may lead to diagnostic errors, unjustified radiation exposure, delayed patient care, and the ensuing medico-legal pitfalls. The author of this seminar paper concludes by proposing a cognitive theory based approach to understand the underlying reasons for this inadequacy of the radiology request form as a communication tool that emanates from clinical behavior. The proposed study could provide insights into the applicability of the TRA and TPB models at explaining the Clinicians' intention to fill the radiology request form adequately. Identifying cognitive predictors in filling the radiological request form is important for the design of interventions to promote effective interpersonal communication and hence narrow the communication gap between clinicians and radiologists.

Keywords: Clinician-radiologist communication, radiology request form, TRA/TPB

1. Introduction

This paper critically explores on ways to narrow the communication gap between clinicians and radiologists. The ensuing discussion centers on the objectives, purpose of the paper, the general motivation, and the reasons why we need to narrow the communication gap. It also addresses the identified research gap as well as the ways to bridge the communication gap.

1.1. Purpose

This seminar explores how clinicians communicate with radiologists through the radiology request form and the extent of completeness of details on the radiology request forms.

1.2. Thesis Statement

The radiology request form is the main tool of communication between clinicians and the radiologists. The clinician has to supply adequate details on the radiology request form about the patient's illness and demographics that the radiologist needs during interpretation of the radiological examination (Depasquale and Crockford, 2005, Akinola et al, 2009). Inadequate details (message) that the clinicians provide to the radiologist through the radiology request form hinder effective communication between clinicians and radiologists.

Though radiologists may provide a diagnosis even when clinical history is scant, clinicians should supply adequate details on the radiology request form. Moreover, adequate details on the radiology request form allow the radiologist to come up with a more logical diagnosis and differential diagnosis thus averting misdiagnosis that could lead to malpractice lawsuits and poor patient care (Akinola et

al, 2009; Boonn and Langlotz 2008). Supplying adequate details on the radiology request form could also speed up communication and avoid delay in issuing the radiology report while awaiting the clinical history.

In order to narrow the communication gap between clinicians and radiologists, needs effective intervention strategies to help improve the provision of adequate details on the radiology request form. Effective communication is a two-way process that could promote better patient care.

Even though radiologists are adequately trained to provide a diagnosis even when clinical history is scant, clinicians should supply adequate details on the radiology request form to avert misdiagnosis, malpractice suits, or delay in issuing the radiology report as the clinical history is being awaited that could breed poor patient care.

1.3. General Motivation to Narrow the Communication Gap

The general motivation to tackle the communication gap between clinicians and radiologists emanates from the author's desire to lay framework that would foster effective communication between radiologists and clinicians. Currently, there is lack of theory based behavioral research to identify the cognitive predictors of the clinician's failure to provide adequate details on the radiology request forms. The author of this seminar paper having gone through the health communication course from theory to practice, realized that the challenges that radiologist face in the course of their work could be minimized if the communication gap between clinicians and the radiologists is narrowed.

Theory based behavioral change communication interventions are key to effective health communication (Glanz, Rimer and Viswanath, 2008).

1.4. Importance of Narrowing the Communication Gap between Clinicians and Radiologists

In the communication chain between clinicians and radiologists, some of the barriers that could hamper effective communication include the originator of the message (the clinician), the message (the details supplied by the clinician on the radiology request form), audience (the radiologist/ radiologic technologist/radiographer), and the feedback from the audience (the radiological report).

The message from the clinician to the radiologist is a pertinent influencer of the type of feedback that is likely to the originator of the message. Supplying inadequate details (the message) on the radiology request form widens the communication gap between the clinicians and the radiologist.

For example, the failure of documentation of the relevant last menstrual period of a pregnant female patient referred for a barium meal x-ray may lead to hazardous exposure of the developing fetus to radiation.

1.5. Research Gap Identified in Studies on the Radiology Request form as a Communication Tool

The choice by the clinician to fill the radiology request form is mainly voluntary following rational thinking, yet the current available research strategies are bereft of any attempt to interrogate and determine the cognitive factors that contribute to the clinical behavior of not supplying adequate details on the request form.

Critical analysis of the available literature shows a gap in that there is limited documentation of theory-based approach to identify the reasons for the clinician's failure to fill the radiology request form adequately. The theory of reasoned action and the theory of planned behavior that summate the predictors of behavior that is voluntary and rational in nature look at constructs like attitude, subjective norm, and perceived behavioral control (self-efficacy) have been successfully used in predicting clinician's intention to prescribe emergency contraception among many other clinical behaviors (Sable MR et al, 2006).

1.6. Filling the Communication Gap between Clinicians and Radiologists

Through this paper, the author attempted to find out the extent of use of health communication theories in identifying factors that hinder the clinicians from providing adequate information, as it is required in the radiology request form. The proposed theory based research that shall follow this seminar paper, will identify the cognitive predictors of the clinician's behavior of not supplying adequate details on the radiology request form. Moreover, this intervention strategy informed by the theories of health behavior shall be more effective in leading to the clinician's behavior change and hence better communication between radiologists and referring clinicians.

1.7. Contribution of the Paper

Adequate filling of the x-ray request form could foster effective communication between clinicians and radiologists and lead to better patient outcomes through achievement of reasonable diagnosis. The most vulnerable group of people that bear the greatest brunt from inadequate filling of the x-ray request forms by clinicians includes the patients and besides the clinicians and radiologists stands the risk of malpractice suits due to misdiagnosis or exposure of patients to unjustified radiation (Flyer and Mak, 2013).

The major beneficiaries of effective communication between the clinician and the radiologists will be the patients, the clinicians, the radiologic technologists, and the radiologists.

2. Aim of This Seminar Paper

The aim of this seminar paper is to review literature on the existing communication gap between clinicians and the radiologists by looking at the radiology request form as the only tool of written communication. The formulated five questions guided the literature review:

1. What is the role of the radiology request form as a tool of clinician-radiologist communication?
2. What factors influence the extent to which the clinicians fill the radiology request form?
3. What methods have previous researchers used in tackling the clinician and the radiologist communication?
4. What is the impact of failure by the clinicians to provide adequate details on the radiology request form?
5. What ways could narrow the communication gap between the clinicians and radiologists?

3. Literature Review

3.1. Methodology for Literature Review

Among the key search terms that were used to search for relevant academic journal articles from electronic databases included: "radiology request form", "x-ray request form filling", "Communication between clinicians and radiologists", "theories of reasoned action", "theory of planned behavior", "clinician-radiologist communication", "ordering for x-ray examinations", "theory based communication interventions between clinicians and radiologists", "two way communication", and "one way communication".

3.2. Literature Review on Narrowing the Communication Gap between Clinicians and Radiologists

The importance of the radiology request forms should not be underestimated. The request form is the main tool of communication between the clinician and the radiologist/radiographer. In order to provide a good diagnosis and differential diagnosis, radiologists need an adequately filled request form (Depasquale and Crockford, 2005, Akinola et al, 2009). In case the clinicians do not adequately fill the radiology request forms, radiologists may give undue priority to incidental findings and thus interfere with the optimal care of the patient.

According to Mozumdar & Jones (2003), clinicians are increasingly using radiological services for diagnosis and treatment. The referring clinician and the radiological consultant can contribute to efficient and effective consultation through direct interpersonal interaction; however, given the increasing volume of radiological exams, there has been a reduction in the frequency of direct communication between the referring clinician and the radiologists. This leads to inadequate clinical information for the radiologist at the time of interpretation thus contributing to poor patient outcome (Boonn and Langlotz 2008).

Emanating from this scenario, the level of radiologist malpractice suits is also increasingly being witnessed following the dramatic increase in the number of radiological exams performed, as there was a 40% increase of such suits between 1996 and 2003 in the United States most of which could have been avoided if there was effective communication between clinicians and radiologists. Moreover, claims payouts due to communication breakdowns in conveying test results rose by \$70 million from 1991 to 2010 across all specialties. This scenario calls for a quick and accurate communication between radiologists and clinicians in today's time-sensitive medical delivery system (Flyer and Mak, 2013).

Accurate communication between radiologists and clinicians could improve if the clinicians are educated on effective communication between themselves and their radiological colleagues. Important details to be supplied on the radiology request form include the means by which patient arrives at the department whether walking, wheelchair or stretcher. In addition, the patient's name, age, sex, last menstrual period, the clinical history and physical findings, the type of examination and date, plus the question that the radiologist should answer, and the name of the clinician as well as signature are equally important (Irrurhe et al, 2012).

According to Jumah et al (1995), faults in the filling of the radiology request form following audit of 4,122 request forms include omission of the age of the patients; this occurred in 28% of the cases. There was absence of clinical information in 23% of the request forms and illegible entries were 16% of the cases. There were 1.5% unconventional abbreviations used by clinicians on request forms. On the other hand, Akinola et al (2009) found out after audit of 145 request forms that about 95.8% inadequate addresses. Although patients' ages were provided in 90.3% of cases, 74 (57.0%) of them were only written as figures. Though clinical history was given in almost all patients, only 26 (18.2%) were detailed. Also noted was the use of abbreviations that are not universally acceptable in all the forms.

The other players that utilize the information on the radiology request form are the radiographers/ radiologic technologists. The radiographers/radiologic technologists are the trained technologists that perform the radiological exams and they in turn hand in the images to the radiologist for interpretation. Any breakdown in the chain of communication between clinicians and the radiologists hampers optimal patient care delivery. According to Mohamed Yousef et al (2011), the radiologic technologist must be certain to understand and if necessary, clarify the information provided on the radiology request form, for example, an abbreviation(s), used and vague terms such "leg" or "arm" (versus femur or humerus). The technologist must also be alert to note and clarify conflicting information, for example left ankle examination, when the patient complains of his obvious injury to the right ankle. Computerized systems or department policy may require that there be appropriate and accurate diagnosis information accompanying every X-ray request form for diagnostic procedure.

According to the guidelines issued by the Royal College of Radiologists regarding completion of the radiology request form, the requests ought to be accurate and legible to avoid misinterpretation (<http://www.rcr.ac.uk/content.aspx>, accessed on 28/02/2014).

The year 2000 United Kingdom Government legislation on “Ionizing Radiation Medical Exposure Regulations” (IRMER) states that when requesting radiological examinations, the referring clinician is required to provide sufficient and accurate clinical information for the IRMER practitioner (radiologist/radiographer) to be best able to determine whether the examination is appropriate and justified.(www.sor.org/learning/document-library/irmer-2000-and-irmer-amendment-regulations-2006-2011(accessed 24 March 2014)). In conclusion, a critical analysis of the literature reviewed shows that almost all the studies are clinical audits of the radiology request form and none so far has utilized theory based evaluation of the clinician’s behavior despite some of the studies recommending a change in attitude of the clinicians. To understand the reasons behind the clinicians’ failure to communicate effectively with radiologists in this regard, it is important to examine person-related variables (like beliefs, attitudes, and self-efficacy) that influence behavior. I say so because, the choice by the clinician to fill adequate details on the radiology request form is a voluntary behavior based on rational thinking on the part of the clinician. Rational behaviors are predictable based on the cognitive theory of reasoned action and the theory of planned behavior.

3.3. Theoretical Model that can inform the Clinician-Radiologist Communication

According to Montano & Kasprzyk (2008), the Theory of reasoned action (TRA) and the Theory of Planned behavior (TPB) focus on theoretical constructs concerned with individual motivational factors as determinants of the likelihood of performing a specific behavior. TRA and TPB both assume the best predictor of behavior is behavioral intention, which in turn relies on one’s attitude toward the behavior and social normative perceptions regarding it. TPB is an extension of the TRA and includes an additional construct: perceived behavioral control over performance of the behavior.

Adapting the behavioral definitions to each of the three components of the theory of reasoned action to reflect the target behavior of filling the radiology request form by clinicians in this seminar paper, the definitions reflect as follows:

- **Attitudes:** looks at the sum of beliefs an actor about a particular behavior weighted by the actor’s evaluations of these beliefs. The clinician might have the beliefs that filling the radiology request form adequately is good for their patients, that filling the radiology request form makes the clinician look professional, that filling the radiology request form may take too much time, and that adequate filling of the radiology request form requires to be keen when clerking the patient. Weighting of each of these beliefs for example, professionalism and good patient care issues might be more important to the clinician than issues of time and comfort.
- **Subjective norms:** looks at the influence of significant people in one’s social environment on his behavioral intentions; the beliefs of these significant other people, weighted by the importance one attributes to each of their opinions, will influence one’s behavioral intention.

The clinician might have some senior professional colleagues or supervisors who are keen at adequate filling of details on the radiology request form and these colleagues constantly encourage him/her to do so. However, the clinician’s friends might prefer a carefree casual style of filling the radiology request form and scoff at those who adequately fill the radiology request form. The beliefs of these people, weighted by the importance the clinician attributes to each of their opinions, will influence the clinician’s behavioral intention to adequately fill the radiology request form, which will lead to the clinician deciding to engage in the behavior of adequately filling the radiology request form or not.

- **Behavioral intention:** intention is a function of both attitudes toward a behavior and subjective norms toward that behavior that in turn predicts actual behavior.

The clinician’s attitudes about adequate filling of the radiology request form combined with the subjective norms about filling of the radiology request form, each with their own weight, will lead the clinician intention to adequately fill the radiology request form (or not), which will then lead to the clinician’s actual behavior.

3.4. Theoretical Framework

TRA asserts that the most important determinant of behavior is behavioral intention. Direct determinants of individuals’ behavioral intention are their attitude towards performing the behavior and their subjective norm associated with the behavior. The theory of reasoned action and the theory of planned behavior focus on theoretical constructs concerned with individual motivational factors as determinants of the likelihood of performing a specific behavior. TRA and TPB assume the best predictor of a behavior is behavioral intention, which in turn is determined by attitude towards the behavior and social normative perceptions regarding it. TPB is an extension of TRA and includes additional construct: perceived control over performance of the behavior. TRA and TPB focus on the constructs of attitude, subjective norm and perceived control (Glanz, Rimer and Viswanath, 2008)

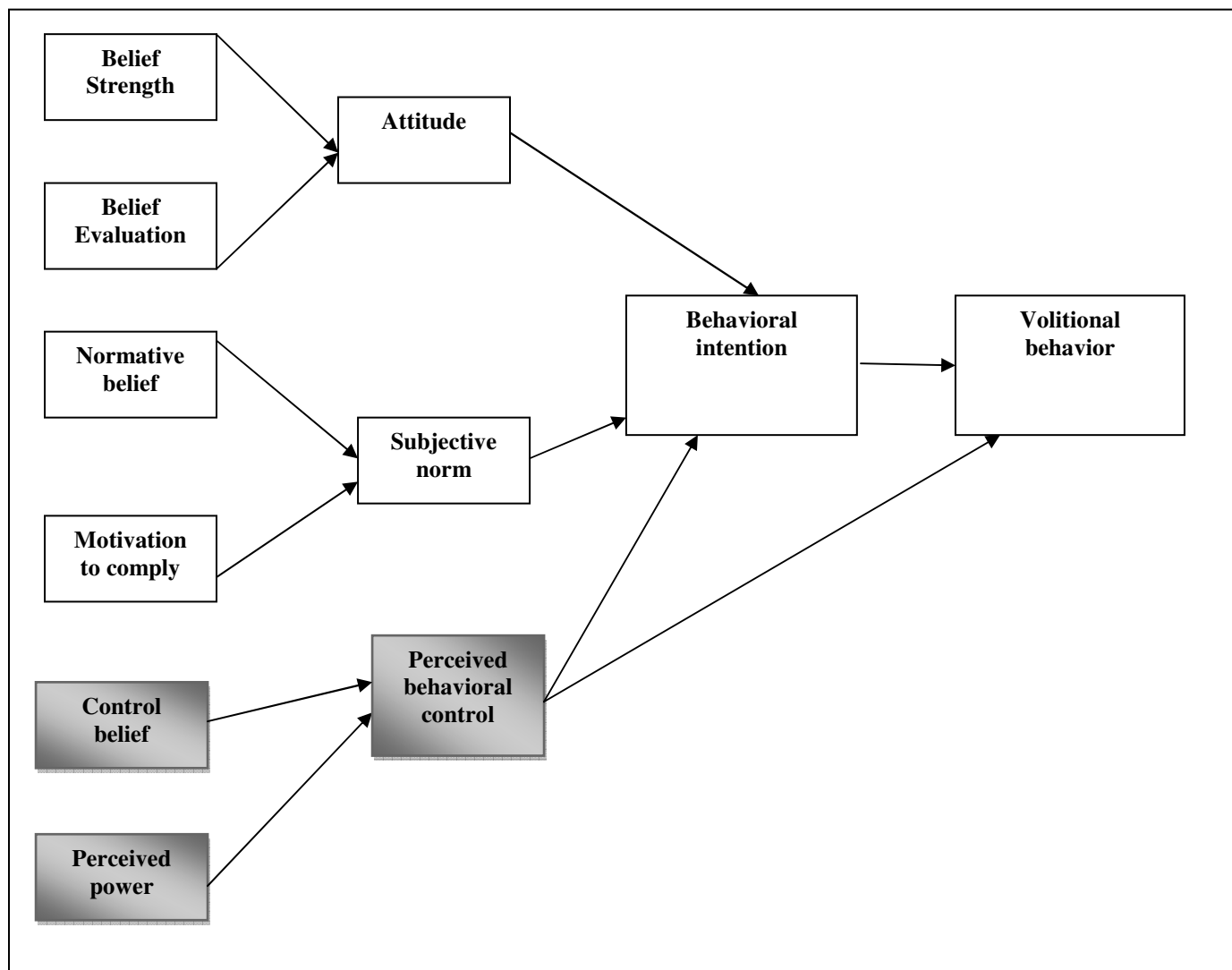


Figure 1: Theoretical framework of TRA/TPB (Ajzen)

Figure 1: The upper un-shaded areas shows the constructs of the TRA while the entire figure shows the Theory of Planned Behavior. Jillian et al (2004) summarizes that the usefulness of the TRA and TPB addresses the following four research goals: Predicting intentions to engage in a particular behavior, understanding influences to a particular behavior, designing behavioral interventions and evaluating behavioral interventions.

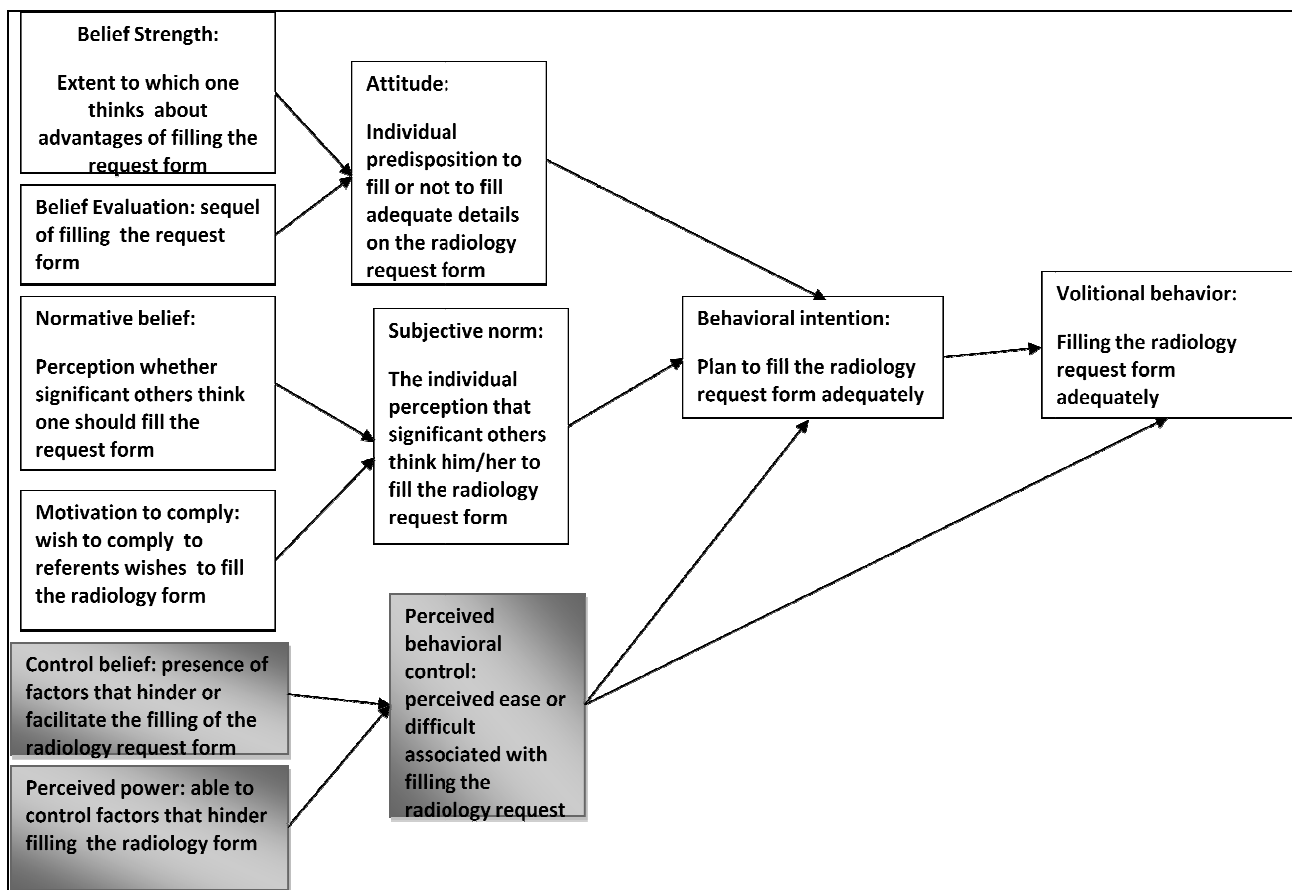


Figure 2: Fitting the TPB Theoretical Framework to predict intention to fill radiology request form

3.5. Applications Informed by the Theory of Reasoned Action and Theory of Planned Behavior

Madden, Scholder, and Ajzen (1992) compared Ajzen's theory of planned behavior with the theory of reasoned action for 10 behaviors chosen to represent a range with respect to control over performing the behavior. The results indicate that inclusion of perceived behavioral control enhances the prediction of behavioral intention and behavior. Consistent with the theory of planned behavior, the effects of perceived behavioral control on a target behavior are most vivid when the behavior presents some problem with respect to control.

Tiina, Minna, Jorma, Taina, and Pekka (2010) conducted a cross-sectional survey on Finnish healthcare organisations within three hospital districts with the aim of producing baseline information for developers and implementers by using the theory of planned behavior. The target population included physicians, nurses, and other professionals. Indicators of the intention to use clinical guidelines were observed by using a theory-based questionnaire. The main data analysis was done by means of multiple linear regressions. The results indicated that all theory-based variables, the attitude toward the behavior, the subjective norm, and the perceived behavior control were important factors associated with the professionals' intention to use clinical practice guidelines for their area of specialization in the decisions they would make on the care of patients in the next three months. In addition, both the nurse and the physician factors had positive ($p < 0.01$) effects on this intention in comparison to other professionals. In the similar models for all professions, the strongest factor for the physicians was the perceived behavior control, while the key factor for the nurses and the other professionals was the subjective norm. This means that context- and guideline-based factors either facilitate or hinder the intention to use clinical guidelines among physicians and, correspondingly, normative beliefs related to social pressures do so for nurses and other healthcare professionals. In conclusion, the results suggested that the theory of planned behavior is a suitable theoretical basis for implementing clinical guidelines in healthcare practices and that one's profession had an effect on intention to use clinical guidelines in patient care.

Barbara Loken (1983) applied the Ajzen and Fishbein's (1980) theory of reasoned action to examine television viewing behavior, the effects of attitudes toward objects and other external variables on the model components using structural equation analyses. Findings indicated that variables external to the model such as attitudes toward objects did not contribute to behavioral intentions significantly over and above behavioral attitudes and subjective norms. The relationship between cognitive variables proposed to underlie behavioral attitudes and external variables showed that intentions were found to be moderately good predictors of behavior, and better predictors for non-intenders than for intenders.

Lastly, other examples of volitional behavioral studies informed by the theory of reasoned action include prediction of condom use, consumption of genetically modified food, birth control behavior, alcohol consumption, smoking, use of sunscreens to protect exposure against the sun, and seat-belt use by travelers. In order to study a behavior using the TRA/TPB models requires that an initial

qualitative elicitation survey proceed to pick out thematic factors for the construction of questionnaires for the main study that is quantitative in design (Montano and Kasprzyk, 2008). Such a qualitative elicitation survey for predicting the clinician's behavioral intention to supply adequate details on the radiology request is best addressed by open-ended questions through a focused group discussion.

In line with Jillian et al (2004) methodology on making TRA/TPB questionnaires, the sample questions proposed for the focused group discussion as part of the elicitation survey in order to come up with themes for the TRA/TPB study on predicting the clinicians' behavioral intention to supply adequate information on the radiology request form for communication shall include:

1. What details on the radiology request form do you find difficult to fill?
2. What section of the radiology request form do you consider most important?
3. Which details of the radiology request form are regularly omitted when it comes to filling the radiology request form?
4. What are the advantages of adequately filling the radiology request form?
5. What are the disadvantages of filling the radiology request form?
6. Which people or groups of people would approve if you adequately filled the radiology request form?
7. Which people or groups of people would disapprove if you did not provide adequate information on the radiology request form?
8. Which group of people would disapprove if you provided adequate information on the radiology request form?
9. What are the perceived barriers that could make it more difficult for you to supply adequate details on the radiology request form?
10. What are the facilitating factors that could make it easier for you to supply adequate details on the radiology request form?

4. Conclusion and Implications

4.1. Conclusion

In conclusion, a critical analysis of the literature reviewed shows that almost all the studies are clinical audits of the radiology request form and none so far has utilized theory based evaluation of the clinician's behavior despite some of the studies recommending for a change in attitude of the clinicians. The relevant available literature also reveals that clinicians do not supply adequate details as required on the radiology request form despite the fact that it is the essential form of written communication between clinicians and radiologists (Akinola et al, 2009).

To understand the reasons behind the clinicians' failure to communicate effectively with radiologists in this regard, it is important to examine person-related variables (like beliefs, attitudes, and self-efficacy) that influence behavior. I say so because, the choice by the clinician to fill adequate details on the radiology request form is a voluntary behavior based on rational thinking on the part of the clinician. The theory of reasoned action and the theory of planned behavior are useful in understanding rational behaviors.

4.2. Recommendation

I propose a study to identify the predictors of the clinician's behavior with regard to providing adequate information on the radiology request form based on, the Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) constructs such as attitude, subjective norm, and perceived behavioral control. The proposed study could provide insights into the applicability of the TRA and TPB models at explaining the Clinicians' intention to fill the radiology request form adequately. Identifying cognitive predictors in filling the radiological request form is important for the design of interventions to promote effective communication and hence narrow the communication gap between clinicians and radiologists.

5. References

- i. Akinola, R., Akinkunmi, M., Wright, K., & Orogbemi, O (2009). Radiology request forms: are they adequately filled by clinicians? The Internet Journal of Radiology. 2009 Volume 12 Number 1.
- ii. Barbara Loken (1983), "The Theory of Reasoned Action: Examination of the Sufficiency Assumption for a Television Viewing Behavior", in NA - Advances in Consumer Research Volume 10, eds. Richard P. Bagozzi and Alice M. Tybout, Ann Arbor, MI: Association for Consumer Research, Pages: 100-105.
- iii. Boonn, W. W., and Langlotz, C.P.(2008). Radiologist Use of and Perceived Need for Patient Data Access. J Digit Imaging. Aug 2009; 22(4): 357-362. Published online May 6, 2008. doi:10.1007/s10278-008-9115-2
- iv. Depasquale, R., & Crockford, M.P. (2005). Are radiology Request forms adequately filled in? An audit assessing local practice. Malta Medical Journal, 17(4):36-38.
- v. Flyer, M., & Mak, S. (2013). Closing the Communication Gap between Diagnostic Radiology and Clinicians. Seminar presentation to Society of Imaging Informatics in Medicine (SIIM) 2013 annual meeting. (Also available on <http://www.itnonline.com/article/closing-communication-gap-between-diagnostic-radiology-and-clinicians> accessed on 30/03/2014)
- vi. Glanz, K., Rimer, B.R., & Viswanath, K. (2008): Health Behavior and Health Education: Theory, Research and Practice. (4th ed.). John Wiley & Sons, 111 River Street: USA.
- vii. <http://www.rcr.ac.uk/content.aspx>, accessed on 28/02/2014
- viii. Irurhe, N.K., et al (2012). Compliance rate of Adequate Filling of Radiology Request Forms in Lagos University Teaching Hospital. World Journal of Medical Sciences 7(1):10-12, 2012 Doi:10.5829/idosi.wjms.2012.7.1.56433

- ix. Jillian, J. F., et al (2004). Constructing Questionnaires Based on the Theory of Planned Behavior. A Manual for Health Services Researchers. United Kingdom.
- x. Jones, T.V., Gerrity, M.S., & Earp, J. (1990). Written simulations: Do they predict physicians' behavior? *Journal of Clinical Epidemiology*, 43, 805-815.
- xi. Jumah, K.B., Gordon-Harris, L., & Agahowa, J.I. (1995). Common faults in filling of radiological request forms. *East Afr Med J. Nov*;72(11):744-5.
- xii. Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behavior and the theory of reasoned action. *Personality and Social Psychology Bulletin*, 18, 3-9.
- xiii. Miller, K. (2005). *Communications theories: perspectives, processes, and contexts*. New York: McGraw-Hill.
- xiv. Mohamed Yousef et. al., Evaluation of radiology request forms, *SMM* 2011; 6 (3):201 – 210
- xv. Montano D. E and Kasprzyk D(2008). Theory of Reasoned Action, Theory of Planned Behavior, and The Integrated Behavioral Model. In *Health Behavior and Health Education. Theory, Research, and Practice*. 4th ed. Karen Glanz, Barbara K. Rimer, K. Viswanath, Eds. Jossey-Bass, Sanfrancisco.
- xvi. Mozumdar, B.C., & Jones, G. (2003). Medico-legal issues in radiological consultation. *Radiol Manage* 2003 Sep-Oct;25(5):40-3.
- xvii. Sable M.R., et al (2006). Using the theory of reasoned action to explain physician intention to prescribe emergency contraception. *Perspectives on sexual and reproductive health*, 2006 Mar;38(1):20-7.
- xviii. Sheppard, B.H.; Hartwick, J. & Warshaw, P.R (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15, 325–343.
- xix. Society of Radiographers. IR(ME)R 2000 and IR(ME) Amendment Regulations 2006 & 2011. Library Professional & Trade Union Titles, 2012. Available at: www.sor.org/learning/document-library/irmer-2000-and-irme-amendment-regulations-2006-2011 (accessed 24 March 2014).
- xx. Tiina Kortteisto, Minna Kaila, Jorma Komulainen, Taina Mäntyranta and Pekka Rissanen (2010). Healthcare professionals' intentions to use clinical guidelines: a survey using the theory of planned behavior. *Implementation Science* 2010, 5:51doi:10.1186/1748-5908-5-51