Chapter 4: Questionnaire Survey Development & Findings

4.1 Introduction

The previous chapter made a case for using a multi-methods approach (questionnaire survey and semi-structured interviews) to investigate the research question. The purpose of this chapter is to explain the development of a questionnaire survey based on the model by Heeks et al (1999) (see Chapter 2, section 2.7) and to present the findings from that questionnaire. The findings in this chapter have been published (Walsh, Burns, & Antony, 2010).

4.2 Developing the Questionnaire

4.2.1 Questionnaire Content and Format

The questionnaire was based on the information, technology, processes, objectives, skills, management systems, other resources (ITPOSMO) and the model by Heeks et al. 1999, which attempts to identify gaps that exist between the design conceptions of the reporting system and the attitudes and perceptions of reporters using the system.

This framework consists of seven dimensions:
(1) information;
(2) technology;
(3) processes;
(4) objectives and values;
(5) staffing and skills;
(6) management and structures; and
(7) other resources.

A review of the literature yielded no questionnaire measures based on the ITPOSMO model, so questionnaire items about each of the seven dimensions were developed / adapted from existing measures about reporting and/or safety climates in healthcare (see Flin, Burns, et al.,2006 for a review of these measures).

Participants responded to questions about the Datix system in respect to these seven dimensions by indicating their agreement on a five-point Likert scale with anchors of “strongly disagree” to “strongly agree.” For each questionnaire item, they responded by circling a number from “1” to “5” where a lower number would indicate disagreement with the statement, and a higher number would indicate agreement with the statement. See Appendix 1 for a copy of the questionnaire.

4.2.2 Pilot Testing the Questionnaire

The questionnaire was pilot tested with ten employees from the organisation’s Health & Safety, Clinical Governance & Risk Management departments. These participants stated that the questionnaire format was easy to understand and complete.

4.3 Method

4.3.1 Participants

Participants were employees of an NHS Scotland Health Board. Questionnaires were sent via internal mail to a random selection of medical consultants, managers, nurses, allied health professionals, and other support staff across the health board’s four hospitals. In total, 440 questionnaires were distributed and 126 were returned (an overall response rate of 29%); 210 were sent to medical consultants (response rate = 12%), 93 to managers (response rate = 29%), and 70 to nurses (response rate = 50%). This chapter shall consider the findings from respondents in the three largest occupational groups (medical consultants, managers, and nurses), which comprised 73% of respondents (seven respondents did not indicate their occupational group).

The demographics of the three main occupational groups are shown in Table 4.1. There were no significant differences between these groups, except gender, as might be expected.

		Consultant	Manager	Nurse	Overall
Gender	Male	66.7%	36.0%	8.6%	36.4%
	Female	33.3%	64.0%	91.4%	63.6%
Age	<= 40	9.5%	17.4%	22.9%	23.4%
	41 to 50	52.4%	52.2%	45.7%	46.8%
	> 50	38.1%	30.4%	31.4%	29.7%
Service	< 5 years	18.2%	52.2%	35.3%	34.8%
	5-15 years	50.0%	13.0%	29.4%	29.5%
	> 15 years	31.8%	34.8%	35.3%	35.7%
DATIX use	Had used DATIX in the past year	56.5%	47.8%	71.4%	60.5%
TOTAL		**24**	**25**	**35**	**126**

Table 4.1: Demographics of the sample by main occupational groups.

As mentioned in the Organisational Context section (see Chapter 3.4), participants were recruited from the organisation's four acute hospitals. It was inappropriate to compare the response rate between these four hospitals because many staff worked across these four sites.

4.3.2 Procedure

Paper copies of the questionnaire were distributed in questionnaire packs via internal mail. Completed questionnaires were returned to the health board's research & development department, sealed in response envelopes provided. A reminder e-mail was sent out via the Health Board's Communications department before the closing date for responses.

4.4 Results

The questionnaire findings for the three main occupational groups (consultants, managers and nurses) for the following are reported in this chapter:

1) objectives and values about reporting;
2) design of and information collected by Datix;
3) attitudes toward management with respect to Datix;
4) attitudes about training.

An exploratory factor analysis was conducted on the items within these sections of the questionnaire to determine the underlying factors. Mean scores for each respondent were calculated for each factor. The internal reliability of each factor was established by computing Cronbach's Alpha (Cronbach, 1951). Finally, the mean score for each of the three main staff groupings was calculated and compared.

The other four dimensions of the ITPOSMO model (technology, processes, staffing and skills, and other resources) are not reported in this chapter concerned more with resource-based issues about implementation and have not been identified as barriers to incident reporting in the literature. Actual adverse incident reporting data from the health board is also presented.

4.4.1 Objectives and values about reporting

Respondents were asked about their views on objectives and values about reporting adverse incidents. One meaningful factor emerged from the factor analysis: responsibility for reporting. This factor accounted for 33.6% of the variance and showed reasonable internal reliability. This is shown in Table 4.2, which also gives the mean score for the three main occupational groups. It should be noted that the mean scores could range from "1" to "5" as participants responded to individual questionnaire items by circling a number on a five-point Likert scale with anchors of "strongly disagree" to "strongly agree." Therefore, higher mean scores (e.g. 4 or 5) indicate greater agreement/more positive attitudes and perceptions, and lower mean scores (e.g. 1 or 2) represent less agreement/more negative attitudes and perceptions.

As shown in Table 4.2, positive attitudes were expressed about responsibility for reporting adverse incidents by all three occupational groups. No significant differences emerged between consultants, managers and nurses on this factor.

Factor / Typical item	**Number of Items (Item)**	**Alpha**	**Consultant**	**Manager**	**Nurse**
			Mean(SD)	Mean(SD)	Mean (SD)
Responsibility for reporting / I believe all staff should consider themselves responsible for reporting Adverse Incidents on DATIX.	3 (22,23,24)	0.62	3.80(0.77)	3.98(0.76)	3.99 (0.84)
n=			21	22	35

Table 4.2: Hospital Staff's views on Objectives and Values

4.4.2 Design and information

Participants were asked their views on the design of and information collected by Datix. The four factors that emerged from the factor analysis were:
(1) usefulness of Datix for improving patient safety;
(2) how information from Datix informs the organisation;
(3) use of Datix on a continuous and hospital-wide basis; and
(4) adequacy of Datix for reporting and recording adverse incidents.

The four factors extracted accounted for 63.6% of the variance and all showed reasonable internal reliability. As shown in Table 4.3 mostly neutral views were expressed about the design of and information collected by Datix. An analysis of variance (ANOVA) revealed that overall, there were significant differences between the occupational groups for the overall average score; $F(2, 77) = 3.88$, $p < 0.05$. Pairwise comparisons using the Bonferroni method revealed that this was because the consultants' views were significantly more negative than nurses' views ($p < 0.05$).

An ANOVA found that overall, there were significant differences between the occupational groups for how information from Datix informs the organisation; $F(2, 75) = 3.99$, $p < 0.05$. Pairwise comparisons using the Bonferroni method revealed that consultants' views were significantly more negative than nurses' views ($p < 0.05$). The difference between consultants' and managers' views approached significance at the 0.05 level.

An ANOVA also revealed that overall there were significant differences between the occupational groups for use of Datix on a continuous and hospital-wide basis; $F(2, 77) = 9.48$, $p < 0.001$. Pairwise comparisons using the Bonferroni method revealed that consultants' views were significantly more negative than both nurses' and managers' views ($p < 0.05$ for both).

There were no significant differences between the occupational groups for usefulness of Datix for improving patient safety, and adequacy of Datix for reporting and recording adverse incidents.

Factor / Typical item	Number of Items (Item)	Alpha	Consultant	Manager	Nurse
			Mean (SD)	Mean (SD)	Mean (SD)
Usefulness of DATIX for improving patient safety / DATIX does not provide information on patient safety issues locally	5 (3x,4x,6x,10x,13x)	0.798	2.80 (0.90)	3.18 (0.69)	3.01 (0.90)
How information from DATIX informs the organisation/ The organisation is more informed of the number of Adverse Incidents by using DATIX than paper system	3 (8,14,15)	0.778	3.19 (0.93)	3.80 (0.81)	3.84 (0.92)
Use of DATIX on a continuous and hospital-wide basis / All Adverse Incidents are systematically identified on a continuous basis	3 (1,2x,7)	0.634	2.70 (0.95)	3.32 (0.70)	3.68 (0.80)
Adequacy of DATIX for reporting and recording adverse incidents / DATIX records all the actions taken that have resulted from an Adverse Incident investigation	3 (9,11,12)	0.724	3.25 (0.94)	3.16 (0.93)	3.28 (0.98)
Overall Average	14	0.849	2.93 (0.76)	3.34 (0.58)	3.41 (0.60)
n=			22	22	35

Table 4.3: Hospitals Staff's views on Design and Information Collected by DATIX.

4.4.3 Attitudes toward management of Datix

Respondents were asked their views on how management used the Datix system. The factors that emerged from the factor analysis were trust, reviewing and checking use and feedback. The three factors extracted accounted for 73% of the variance and all showed reasonable internal reliability. As shown in Table 4.4, all three occupational groups expressed mainly positive attitudes about trust, rather neutral attitudes about reviewing and checking use and negative attitudes about feedback. The overall average score was neutral for all three groups.

Factor / Typical item	Number of Items (Item)	Alpha	Consultant	Manager	Nurse
			Mean(SD)	Mean(SD)	Mean (SD)
Trust / I would be reluctant to tell my Line Manager that I have been involved in an Adverse Incident.	3 (40, 41x, 44x)	0.64	4.09 (0.59)	4.19 (0.47)	4.06 (0.69)
Reviewing and Checking use / My Line Manager does not review all of my Adverse Incident Reports, which will have been recorded on DATIX.	2 (51,53x)	0.69	2.39 (0.99)	3.26 (0.82)	3.41 (0.99)
Feedback / I always receive feedback from Incident / Near-Miss reports.	2 (48,49)	0.75	2.21 (0.98)	2.48 (0.84)	2.79 (1.16)
Overall average	**7**	**0.72**	**3.32 (0.59)**	**3.51 (0.46)**	**3.52 (0.68)**
n=			**22**	**22**	**35**

Table 4.4: Hospital Staff's Attitude towards Management

ANOVA revealed that overall, there were not any significant differences between the occupational groups for the overall average score. However, ANOVA revealed that overall, there were significant differences between the occupational groups for reviewing and checking use; $F(2, 59) = 4.19$, $p < 0.05$. Pairwise comparisons using the Bonferroni method revealed that this was because consultants' views were significantly more negative than nurses' views ($p < 0.05$). The difference between consultants' and managers' views approached significance at the 0.05 level.

4.4.4 Attitudes toward Training

As part of the Staffing & Skills section in the questionnaire, participants were asked whether they had received training for the Datix system. This data is presented in Table 4.5. Nurses and mangers agreed that they had received training whereas consultants indicated that they had not received training.

Item	Number of Items (Item)	Alpha	Consultant	Manager	Nurse
			Mean(SD)	Mean(SD)	Mean (SD)
I received training on the DATIX system.	1 (31)	n/a	2.43 (1.40)	4.00 (0.93)	4.31 (0.87)
n=			21	22	35

Table 4.5: Hospital Staff's Attitudes towards Training

ANOVA revealed that overall, there were significant differences between the occupational groups for training and induction; $F(2, 75) = 22.27$, $p < 0.001$. Pairwise comparisons using the Bonferroni method revealed that this was because consultants' views were significantly more negative than nurses' views ($p < 0.001$) and managers' views ($p < 0.001$).

4.4.5 Reporting behaviour

Finally, participants were asked "During the last year have you reported an incident or near-miss using Datix?" As per Table 4.1, 56.5% of consultants, 47.8% of managers, and 71.4% of nurses reported that they had used Datix to report an incident or near-miss in the past year. A chi-square test was used to investigate whether there were any significant differences in the proportion of respondents from these occupational groups using Datix. The chi-square test revealed that there were no significant differences between these occupational groups on this self-report measure of Datix use; chi-square = 3.447, $p = 0.178$. This finding was surprising as nurses are more likely than doctors to complete incident reports, as noted earlier. However, in this study, the respondents were a self-select sample (the response rate for consultants was only 12% and these consultants may be more predisposed to incident reporting than the consultants who did not respond to the questionnaire) and this questionnaire item may have elicited a socially desirable response.

In order to further investigate reporting trends by occupational group data from the health board was examined. For the calendar year 2008 (when this survey was

conducted) forty-seven incidents were reported on Datix by consultants, 3,535 incidents by nurses, and 191 incidents by managers. Although nurses reported the majority of the incidents, these figures need to be considered in terms of the number of people employed in each group.

In 2008, the Health Board employed 241 consultants, 4,634 nurses, and 161 managers. The proportion of consultants reporting adverse incidents were 0.195; (47 consultant incident reports/241 consultants employed). The proportion of nurses reporting adverse incidents was 0.763. The proportion of managers reporting adverse incidents was 1.186. While indicative of reporting trends, these proportions are somewhat crude figures. They do not take into account the possibility that an individual from an occupational group may have made more than one incident report, thereby inflating the proportion of reports made by an occupational group.

In order to test for independence between the number of incident reports and the number of people employed in each group, three chi-square tests (managers' vs. consultants, managers vs. nurses, and nurses vs. consultants) were conducted. In each case, the test revealed that the number of incident reports was not independent of the number of people employed in each group ($p < 0.0001$). In other words, the proportion of managers reporting on Datix was greater than the proportion of consultants, and nurses, and the proportion of nurses reporting on Datix was greater than the proportion of consultants.

4.5 Chapter summary

The main findings from the questionnaire are that consultants, managers and nurses all had positive attitudes about responsibility for reporting adverse incidents. All respondents indicated that the design of and information collected by DATIX was adequate but medical consultants had more negative attitudes and perceptions than managers and nurses in this respect. All respondents expressed negative attitudes about the amount and type of feedback they received from reporting, and consultants expressed more negative attitudes about how DATIX is managed than managers and nurses. Analysis of adverse incident reporting data found that the

proportion of consultants using DATIX to report incidents was significantly lower than that of managers and nurses.

The findings from this study, that doctors are less likely to express favourable attitudes about reporting and report incidents than other types of healthcare workers, are consistent with findings in the literature (Lawton & Parker, 2002; Kingston *et al.,* 2004; Taylor *et al.,* 2004; Evans *et al.,* 2006; Westbrook *et al.,* 2007; Braithwaite *et al.,* 2008). The negative attitudes expressed in the questionnaire about the amount and type of feedback received after reporting, were also consistent with the literature as introduced in Chapter 1. While these findings are perhaps not surprising, the questionnaire did not identify any additional barriers to incident reporting using an EAIRRS. The factors identified in this questionnaire informed the development of semi-structured interviews, the development and findings of which are presented in the next chapter.