Primary Health Care Research and Development 2005; **6**: 17–23

Developing R&D capacity in a primary care trust: use of the R&D culture index

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There has traditionally been a low level of engagement of primary care practitioners with research. In the UK, primary care trusts (PCTs) now have some responsibility for the encouragement of research and development in primary care. The aim of this study was to assess the current level of research activity and capacity for research within a PCT. A questionnaire, incorporating a recently developed and validated research and development culture index, was sent to all 572 health care professionals and staff under the auspices of North Tyneside Research PCT. Data analysis used nonparametric tests of association including chi-squared, Mann–Whitney U and Spearman's rank order correlation. There was a 50.3 per cent response rate to the questionnaire. Groups more likely to show an increased capacity for research included those with postgraduate qualifications and those in post for the least time. General practitioners were less likely than other professional groupings to declare personal skills or aptitude for research. The two most important factors thought to contribute towards the development of a culture of R&D were having access to people to support development and changes in professional practice and having access to training and development opportunities. The use of the R&D culture index enabled groups to be identified that may be more research interested and can therefore be targeted to increase research capacity. The R&D culture index could be used by other PCTs wishing to define and develop research capacity in primary care.

Key words: primary care; questionnaire survey; research and development; research capacity; R & D culture index

Introduction

Health care during the last decade has emphasized the need for sound evidence to underpin clinical decision making and interventions, with an accompanying enhancement of research capacity to generate this evidence (Department of Health, 2000a, 2000b; Department of Health and Higher Education Funding Council, 2001). This requires medical practitioners to become research aware and research active (Mant, 1998), while also coping with the increasingly complex nature of modern health care in a highly competitive, performance-driven service. However, research in primary care has suffered from systemic disadvantage over a prolonged period of time and specific recommendations of the Mant Report (Department of Health, 1997) were designed to address this problem. The evolution of the academic discipline of general practice throughout the world, the development of primary care research networks, and improved funding for primary care research and research practices have all contributed to an increase in primary care research. However, there continues to be a low level of engagement of primary care practitioners in research activity and in the setting of research agendas (Mant, 1998; Jowett *et al*., 2000; Robinson and Gould, 2000).

The drive towards an evaluative culture has resulted in a similar debate about the barriers and

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 10.1191/1463423605pc231oa

catalysts to the development of such a culture in nursing. It has been observed that although nursing practitioners value research, the majority lack adequate research awareness and change management skills to confidently engage in finding, evaluating and implementing research evidence (Funk *et al*., 1991; Dunn *et al.,* 1998). Attempts to promote a culture of research appreciation are hindered by two major barriers: the prevailing perception of research as a remote science and the absence of a supporting infrastructure (LeMay *et al.,* 1998; Jowett *et al*., 2000; Parahoo, 2000). It has been suggested that a major cultural shift involving clinicians and researchers is essential to help practice become more research based and research to become more clinically relevant (Owen, 1995; Walsh, 1997; Whitford *et al*., 2000).

In the UK, primary care trusts (PCTs) have recently been charged with some responsibility for the encouragement of research and development in primary care. North Tyneside PCT serves a population of 190 000 and has 31 general practices. It has been research active for several years with three research general practices funded by the Northern Region between 1998 and 2001. It has also had research links with local academic institutions and the secondary care trust. The Northern Region funded North Tyneside PCT as a research PCT in 2001. The responsibility of the research PCT was to build research capacity and to carry out research in primary care. A further responsibility for research management and governance was added from 2003. The additional funding has enabled the PCT to employ a research facilitator and to provide protected research time for individual practitioners. The aim of this study undertaken in North Tyneside research PCT was to assess the current level of research activity and research culture of primary care practitioners. 'Research culture' is used in this context to refer to the capacity of practitioners to engage in research and development activity.

Methods

A questionnaire was distributed to all staff and independent contractors under the auspices of North Tyneside PCT in mid-2002 ($n = 572$). These included doctors (general practitioners and public health), nurses (practice, community, school, psychiatric, midwives and health visitors), allied professions (speech therapists, social workers, community workers and counsellors) and managers (practice and PCT). The questionnaire included three sections: biographical questions (area of work, professional and academic qualifications, grade and duration of employment); questions concerning level of research engagement and research training needs; and the R&D (research and development) culture index.

The R&D culture index was initially developed by the University of Northumbria in an organization providing community healthcare as a vehicle to identify personal and organizational development needs and to guide strategy in advancing practitioner engagement with research. Focus group interviews with 56 staff discussing practice development, research capacity and research culture were carried out, and key themes identified. These key themes were used to develop the 18-item questionnaire, which was distributed to nursing staff in the community trust. Responses to the 18 items in the index were on a four-point scale from strongly agree to strongly disagree. In addition, respondents were requested to identify the five items that they perceived to most strongly contribute to an R&D culture. Exploratory factor analysis of the 18 item index resulted in three domains: personal skills and aptitude towards R&D; working environment facilitatory towards R&D; and organizational infrastructure encouraging R&D. These domains accounted for 59.8% of the total variance, with a Cronbach alpha coefficient of 0.92 indicating good internal consistency for the whole index.

Data analysis was with SPSS v11.0 using non-parametric tests of association including chi-squared, Mann–Whitney U and Spearman's rank order correlation.

Results

A response rate of 50.3% (288/572) was obtained for the questionnaire after one reminder. There was no significant difference in response rate between different professional groups.

Research culture

The responses to the 18 items in the R&D culture index are shown in Table 1. Only 49 per cent of respondents agreed with the statement that there was strong professional leadership in research. Agreement with the other statements ranged from 61% to 88% of respondents. When asked to identify the five key statements that would contribute to a culture of R&D in the PCT, respondents chose statements related to the working environment and organizational infrastructure as opposed to personal skills and attributes. The ranking of the statements is shown in Table 1. Six of the eight lowest ranked statements were related to personal skills and attributes.

Respondents who perceived themselves as possessing personal skills and aptitude for research were more likely to want protected time for research (Mann–Whitney *U*, 6805; 1 df; $p = 0.019$), funding to cover this time (Mann–Whitney *U*, 7222; 1 df; $p = 0.001$), expert support (Mann–Whitney *U*, 6058; 1 df; $p < 0.001$), and a peer support group (Mann– Whitney *U*, 7844; 1 df; $p = 0.014$). They were also more likely to want training in applying for research funding (Mann–Whitney *U*, 5917; 1 df; $p = 0.01$) and in intermediate research skills (Mann–Whitney *U*, 5017; 1 df; $p < 0.001$).

Professional group

Four professional groupings were identified: medical ($n = 57$, 20 per cent); nursing ($n = 134$, 47 per cent); allied professions ($n = 46$, 16 per cent); and managers/others ($n = 47$, 16 per cent).

Table 1 Responses to items in the R&D Culture Index (ordered by least agreement)

Domain[a]	Questionnaire item	Agree ($n = 195$) (%)	Ranking for facilitating R&D ($n = 245$) (%)
Organ.	There is strong professional leadership	95 (49)	9 (26)
Personal	I feel confident about using research in professional practice	119 (61)	16 (13)
Personal	I can organize my own time to create opportunities to develop professional practice	121 (62)	12 (19)
Work	My discipline here works as equal partners with other disciplines to change or develop professional practice	120 (62)	10 (25)
Organ.	I have access to training and development opportunities which give me the skills to question and investigate practice	122 (63)	2 (58)
Work	The development work that I do links with the PCTs plans	125 (64)	15 (14)
Work	There are regular staff meetings to explore ideas	131 (67)	6 (32)
Personal	I understand research terminology	132 (68)	17 (12)
Personal	I would like to learn more about research activity during the next six months	137 (70)	18 (8)
Organ.	There are people around to help and support me to change and develop professional practice	139 (71)	1 (63)
Work	There are opportunities to reflect on my work/practice	142 (73)	5 (37)
Work	Development of my professional practice/role is valued as part of my job	146 (75)	3 (45)
Work	There is an opportunity to develop professional practice in my area	151 (77)	8 (29)
Personal	I would like more opportunities to share professional practice development ideas/research/information across the PCT	162 (83)	4 (40)
Organ.	I have the skills to use library and learning facilities	162 (83)	13 (18)
Work	If I have an idea to improve clinical or work practice, I have the knowledge and skills to address it	161 (83)	7 (29)
Personal	I am very keen to use research in professional practice	163 (84)	11 (20)
Personal	I know how professional practice is influenced by research	171 (88)	14 (14)

[a]The three domains of the research and development culture index are: Personal = Personal skills and aptitude towards R&D; Work = Working environment facilitatory towards R&D; Organ. = Organizational infrastructure encouraging R&D.

Doctors were least likely to perceive themselves as having the personal skills and attributes for research ($\chi^2 = 24.6$, 3 df, $p < 0.001$). They were also less likely than nurses, therapists and managers to be interested in research ($\chi^2 = 23.0$, 3 df, $p < 0.001$), and to want research training ($\chi^2 = 19.8$, 3 df, $p < 0.001$), expert support ($\chi^2 = 15.6$, 3 df, $p = 0.001$), peer group support ($\chi^2 = 9.1$, 3 df, $p = 0.028$), or help in applying research findings to practice ($\chi^2 = 25.1$, 3 df, $p < 0.001$). They were less likely than other groupings to want training in basic ($\chi^2 = 19.7$, 3 df, $p < 0.001$) or intermediate ($\chi^2 = 15.1$, 3 df, $p = 0.002$) research skills. Doctors were most likely to feel there were regular staff meetings to explore ideas, with nursing least likely ($\chi^2 = 15.9$, 3 df, $p = 0.001$). There was a downward progression in professional groups from management, to nursing, to doctors, to therapists in those most likely to feel there was opportunity to develop professional practice ($\chi^2 = 8.1$, 3 df, $p = 0.047$). Doctors were least likely, and nursing most likely, to feel they understood research terminology ($\chi^2 = 14.1$, 3 df, $p = 0.003$) and to feel confident about applying research into practice ($\chi^2 = 25.6$, 3 df, $p < 0.001$). Doctors were less likely than other professional groupings to feel they know how professional practice is influenced by research ($\chi^2 = 7.9$, 3 df, $p = 0.04$), to be keen to use research in professional practice ($\chi^2 = 37.1$, 3 df, $p < 0.001$), to want more opportunities to share professional practice and research ideas across the PCT ($\chi^2 = 17.3$, 3 df, $p = 0.001$), and to want to learn more about research in the coming 6 months ($\chi^2 = 25.9$, 3 df, $p < 0.001$).

Qualifications

The qualifications ranged from a doctorate for nine (3%) respondents, a Master's degree for 31 (11%) respondents, a Bachelor's degree for 96 (33%) respondents, to a diploma for 71 (25%) respondents. Eighty one (28%) respondents did not state any academic qualification. Respondents with a postgraduate qualification were more likely to perceive themselves to have personal research skills and aptitude ($\chi^2 = 6.5$, 2 df, $p = 0.039$). They were also more likely to be interested in research ($\chi^2 = 6.9$, 2 df, $p = 0.032$), to be confident using research ($\chi^2 = 9.6$, 2 df, $p = 0.008$), to have the skills to use a library ($\chi^2 = 6.9$, 2 df, $p = 0.033$), but less likely to want training in research skills ($\chi^2 = 18.7$, 2 df, $p < 0.001$).

Engaged in further training

Those taking part in further professional studies were more likely to perceive that there are people around to support them ($\chi^2 = 6.3$, 1 df, $p = 0.012$) and that they have access to training and development opportunities ($\chi^2 = 7.1$, 1 df, $p = 0.008$). They were more likely to want expert support ($\chi^2 = 5.5$, 1 df, $p = 0.019$) and training in critical appraisal skills ($\chi^2 = 5.6$, 1 df, $p = 0.018$), literature searching ($\chi^2 = 7.3$, 1 df, $p = 0.007$) and intermediate research skills ($\chi^2 = 7.7$, 1 df, $p = 0.005$).

Time in post

One hundred and fifty-one (52%) of respondents had been in post less than five years. They were more likely to see themselves as having the personal skills and aptitude for research ($\chi^2 = 23.6$, 1 df, $p < 0.001$), to perceive their working environment to be facilitatory towards R&D ($\chi^2 = 5.1$, 1 df, $p = 0.024$), and to perceive the organizational infrastructure to support R&D ($\chi^2 = 11.0$, 1 df, $p = 0.001$) than persons who had been in post more than five years.

Research activity

Respondents who scored significantly higher in the R&D culture index were more likely to have engaged in research activity in the previous 12 month period (Table 2). Achievement of research 'milestones' in the previous 12 months was significantly correlated with personal skills and aptitude towards research. In particular, being the author of a peer-reviewed publication was significantly correlated with all three domains of the R&D culture index (Table 2).

Discussion

Summary of main findings

This study is the first to use the R&D culture index to assess research capacity in a primary care trust. The R&D culture index performed well in showing a strong association between a higher personal score in the index and recent

Table 2 Research activity in the previous 12 months: correlation with R&D culture index

Research activity in previous 12 months	Number (%)	Total R&D culture index	Personal skills and aptitude	Working environment	Organizational infrastructure
Any research activity	100/288 (34.7)	$U = 6520$, 1 df, $p < 0.001$	$U = 6015$, 1 df, $p < 0.001$	$U = 7559$, 1 df, $p = 0.006$	$U = 8467$, 1 df, $p = 0.16$
Named applicant on successful grant	9/284 (3.2)	$U = 772$, 1 df, $p = 0.055$	$U = 487$, 1 df, $p = 0.002$	$U = 901$, 1 df, $p = 0.16$	$U = 1027$, 1 df, $p = 0.38$
Applicant on approved ethics application	16/284 (5.6)	$U = 1577$, 1 df, $p = 0.076$	$U = 850$, 1 df, $p < 0.001$	$U = 2091$, 1 df, $p = 0.87$	$U = 2114$, 1 df, $p = 0.92$
Author of peer reviewed paper	12/284 (4.2)	$U = 661$, 1 df, $p < 0.001$	$U = 483$, 1 df, $p < 0.001$	$U = 1088$, 1 df, $p = 0.05$	$U = 1010$, 1 df, $p = 0.024$
Presenter of conference paper	19/284 (6.7)	$U = 1505$, 1 df, $p = 0.003$	$U = 1247$, 1 df, $p < 0.001$	$U = 1881$, 1 df, $p = 0.06$	$U = 1970$, 1 df, $p = 0.011$
Current involvement in research	38/288 (13.2)				
Previous involvement in research in last year	8/288 (2.8)	$\chi^2 = 6.74$, 2 df, $p = 0.034$	$\chi^2 = 12.84$, 2 df, $p = 0.002$	$\chi^2 = 5.05$, 2 df, $p = 0.08$	$\chi^2 = 2.19$, 2 df, $p = 0.33$
Not involved in research in last year	242/288 (84)				

U = Mann–Whitney U test; df = degrees of freedom.

research activity. Although respondents ranked the organizational infrastructure and working environment as being most important in encouraging research and development, personal skills and attributes towards research were most likely to be associated with both research activity and the desire to receive further research training.

Medically qualified respondents were less likely to perceive themselves as having the skills for research or to desire further personal development in research skills. Only a minority of respondents perceived there to be strong professional leadership in research. This may partly reflect the low profile given to research within primary care and the perception of research as a peripheral, as opposed to core, activity within primary care. However, primary care is still dominated by general practitioners, and their lack of interest in research may adversely influence the development of a culture of research amongst primary care workers. Two (possibly complementary) approaches to building research capacity in this context ensue. The first is to identify the reasons why general practitioners are not engaging with research and to attempt to address these issues. The second is to target resources on specific groupings who may be more likely to become research active, including those with postgraduate qualifications, those currently engaged in further training, and those in nursing and allied professions. Another group who scored highly in the R&D culture index were respondents who had been in post for less than five years. This suggests that targeting individuals at induction or soon after settling into a new post may encourage them to engage in research training and activity at an early stage.

Comparison with other literature

The proportion of primary care workers involved in research within a year in this study (13%) was similar to that reported over a 3-year period in the study by Robinson and Gould (2000) (13%), but less than that reported by Jowett over a lifetime (Jowett *et al*., 2000) (16%). Similarly, the proportion of primary care workers publishing a peer-reviewed paper (4%) in this study was comparable to that of Robinson and Gould (2000), but lower than that of Jowett (8.6%) (Jowett *et al*., 2000). These results from several studies suggest that the involvement of primary care professionals in research at any one time is stable at around 13%.

Nurses in an integrated trust in Northern Ireland prioritized the same contributors to the development of a culture of R&D as in this study (Glacken 2002). Using the R&D culture index, they identified having access to people to help and support development and changes in professional practice and having access to training and development opportunities as the two key contributors to the development of a culture of R&D. This emphasizes the importance placed on the organizational infrastructure by healthcare professionals in developing research capacity.

Strengths and limitations of the study

The response rate in this study is similar to that in other studies, but low at 50%, thereby limiting generalizability. Non-responders were similar to responders in terms of professional grouping, but it is likely that healthcare professionals with an interest in research would be over-represented amongst responders, leading to a possibility of bias in the results. However, a strength of this study is that it has looked at research activity and culture across a primary care trust, as opposed to only one professional grouping. The R&D culture index does not address issues of research funding and protected time for research, in spite of these being possible barriers to research engagement. Further development of the index for primary care may need to include these parameters.

Implications for further research and policy

The use of the R&D culture index within a research PCT has been useful in identifying groups that can be targeted in order to encourage research involvement. This targeting is now underway and is likely to be productive in terms of increasing research capacity within the primary care trust. A programme of research methods training for interested staff and the establishment of an informal group to provide peer support for researchers has resulted from this targeting.

North Tyneside PCT may not be representative of all PCTs as it has had a background of primary care research over several years. In addition, both the possibility of responder bias and the low response rate limiting generalizability would limit the applicability of these results to all settings. The correlation of a high score in the R&D culture index with recent research activity suggests that the index functions well as a marker of both research interest and activity. A prospective study comparing scores from the R&D culture index with research activity is needed to confirm its use in this respect. However, both the internal reliability of the index and its correlation with research interest and activity suggest that the R&D culture index will provide a useful tool to organizations seeking to develop research capacity.

Further work is needed to identify the reasons why general practitioners are engaging less with research. The disinterest of general practitioners towards research has major implications for the future of primary care research, as it will contribute further to the decline in enquiry-led research (O'Dowd, 1995).

Conclusion

The use of the R&D culture index in a primary care trust has enabled specific groups to be identified that may be more interested in research than others. These groups have been targeted within the PCT in order to attempt to increase research capacity in primary care. Of particular concern from this study was the disinterest of general practitioners in research and further work is needed to identify the reasons for this. The R&D culture index could be used by other PCTs wishing to define and develop research capacity in primary care.

Acknowledgements

We would like to thank the staff in North Tyneside PCT and general practices who responded to the questionnaire. We would also thank the research steering group of North Tyneside Research PCT for helpful feedback. Northern and Yorkshire Regional Health Authority funded North Tyneside Research PCT. For more information on the R&D culture index contact Professor Charlotte L. Clarke, University of Northumbria, Newcastle upon Tyne. Email: charlotte.clarke@unn.ac.uk

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