

The development and piloting of a leadership questionnaire for general dental practitioners: preliminary results from the North West of England and Tokyo

IN BRIEF

- Aims to explore the utility of a pilot leadership questionnaire and understand what attributes are important in a leader from the perspective of a GDP.
- Discusses whether leadership is culturally bound and compares the views of GDPs from the North West with the views of GDPs from Tokyo.
- Considers the difference between how GDPs rate themselves and what they consider to be important.

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Objectives Key reforms in England and Japan have called for greater clinical leadership from general dental practitioners to deliver improvements in the quality of care for patients. In England, the reorganisation of the National Health Service has led to the development of Local Professional Networks to ensure services are clinically led, patient and outcome focused. In Japan, the rapidly changing demographics have led to calls for general dental practitioners to become more active in meeting the emerging population health challenges. Both require engagement at a strategic and a local level. However, little is known about what is meant by clinical leadership in dentistry or what training needs exist. The aim of this study was to develop and pilot a questionnaire to understand what general dental practitioners feel is important about clinical leadership and how they rate themselves. **Methods** A 61-item questionnaire was developed from the literature, an earlier qualitative study and refined through cognitive interviews. Questionnaires were distributed to general dental practitioners across the North West of England and Tokyo, using random sequence generation. For each item, the participant had to record whether they thought the statement was an important component of clinical leadership and how they rated themselves. Both were rated using a seven-point Likert scale. Data reduction was undertaken using principal component analysis to examine for factor loadings within the questionnaire. Differences in mean scores were also used to highlight substantive differences in how general dental practitioners rated the different components of leadership and how they rated themselves. **Results** The response rate for the pilot was low (22.9% and 7.5% for North West and Tokyo respectively). The items that were considered to be important in leadership reduced to two components in the North West (accounting for 62.1% of the total variance): 'How to lead' and 'How not to lead'. In Tokyo, 56.4% of the total variance was explained by three components: 'Demonstrating personal qualities', 'Working with others' and 'How not to lead'. When the self-rated items were reduced, three factors were found to be important in the North West: 'Working with others', 'Setting direction' and 'Managing services' (55.1% of the variance). 'Working with others', 'Demonstrating personal qualities', 'Pragmatism', 'Setting direction' and 'Improving services' were found to be important in Tokyo (52.8% of the variance). The questionnaire items relating to integrity, team-working and having a positive attitude during difficult times were rated highly by both groups. Items relating to providing vision for team, being assertive and having a positive attitude had the greatest mean difference, suggesting possible areas of training need. **Conclusion** The nature of the pilot study and the poor response rate makes any conclusion difficult to infer. Among those that participated, leadership was understood to be more important at a practice level rather than at a strategic level. The questionnaire should be refined further based on the results of the pilot and the data reduction.

INTRODUCTION

The importance of leadership and the role of influencing others to improve population health is a narrative that has recently emerged in England and Japan. In England,

a number of calls from the King's Fund have extolled leadership and the restructuring of the NHS has culminated in Local Professional Networks (LPNs) for dentistry.¹⁻⁴ Analogous to clinical commissioning groups, the purpose of these networks is to link with NHS England, Local Authorities and Public Health England to ensure local services are clinically led, patient focused and deliver outcomes that improve the quality of care.⁴ In Japan, the rapid increase in the number of older people in the population has led to a revision of the remuneration model and the development of community dental services in an attempt to improve the quality of

service for people with long-term conditions. Japanese dentists are to influence others at a local level to ensure that services are fit for purpose and work within multidisciplinary home care teams to improve the care for the elderly and disabled.⁵ However, in both countries, little is known about what general dental practitioners (GDPs) understand by clinical leadership and how they rate themselves.

In a recent qualitative study, leadership was considered to be important by GDPs in both Greater Manchester and Tokyo, although a precise definition remained elusive; 'leadership as the individual' and 'leadership as

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the relationship' were both articulated.⁶ Both groups of GDPs worked in a fee-for-service remuneration system and many examples that were provided related to day-to-day leadership at a practice level, rather than at a strategic level. In an analysis of an oral health promotion programme run by the LPN across Greater Manchester, the importance of 'clinically led and clinically owned' projects was demonstrated, but encouraging GDPs to take a more strategic approach was not without its challenges.⁷

The aim of this study was to develop and pilot a leadership questionnaire to determine what GDPs understand by clinical leadership and examine how they rate themselves. Principal component analysis (PCA) was then used to see how these items could be grouped together.⁸

METHODOLOGY

Procedure

Ethical approval was provided by the University of Manchester Ethics Committee and by the Ritsumeikan University Ethics Review Committee Involving Human Participants (13029).

Items for the pilot questionnaire were developed from existing research on leadership, the NHS Leadership Framework and earlier qualitative studies.^{6,7} Sixty-one items were included. Two text boxes were provided to record answers to the following questions 'Do you understand what is meant by the term 'clinical leadership (if yes, please explain what you mean)?' and 'Is 'clinical leadership' important in general dental practice (please explain your answer)?'.

Cognitive interviews help to 'sense-check' a developing questionnaire by determining whether it is comprehensible, unambiguous and whether the items have content validity i.e. they are relevant to the purpose of the questionnaire.^{9,10} The ten participants were asked to read through the questionnaire 'as if' they were completing it and 'think aloud', taking one item at a time. The research team then made notes about the participants' comments and thoughts. This determined whether the questionnaire was easy to understand and complete. It also identified items that were considered to be duplicates i.e. referred to the same component of leadership. These were deleted.

Two seven-point Likert scales were then added to the pilot questionnaire; one to record how important each item was in clinical leadership ('Is this attribute an important component of clinical leadership?') and the second to determine how the participant rated themselves against the same item ('How do you score yourself?').

Table 1 Results of the principal component analysis*

Country	Response	Factor	Mean factor loading (range)	Cumulative variance
Japan	Importance [†]	1	0.71 (0.64–0.82)	36.32
		2	0.68 (0.5–0.79)	48.55
		3	0.64 (0.43–0.74)	56.41
	Self-rated [‡]	1	0.57 (-0.57–0.86)	25.69
		2	0.72 (0.62–0.80)	35.33
North West	Importance**	3	0.03 (-0.86–0.49)	42.33
		4	0.53 (0.46–0.65)	47.85
		5	0.72 (0.64–0.79)	52.83
		1	0.76 (0.73–0.91)	50.07
		2	0.65 (0.49–0.79)	62.11
	Self-rated ^{††}	1	0.67 (0.60–0.77)	46.47
		2	0.63 (0.43–0.81)	50.89
		3	0.62 (0.56–0.68)	55.14

*Principal Component Analysis was conducted using Varimax rotation
[†]KMO test = 0.623 and Bartlett's test of sphericity is significant
^{**}KMO test = 0.502 and Bartlett's test of sphericity is highly significant
^{††}KMO test = 0.965 and Bartlett's test of sphericity is significant
[‡]KMO test = 0.958 and Bartlett's test of sphericity is significant

Following the cognitive interviews the pilot questionnaire was finalised and translated into Japanese by two of the authors (MN and TO). It was then randomly distributed by post to 998 GDPs across the North West and Tokyo in the autumn of 2013, using random sequence generation. As this was a pilot, no reminder letters were distributed. On return of the pilot questionnaires, the raw data was entered onto an Excel file and imported into SPSS version 19.

The items were then clustered, using PCA as the data reduction method; undertaking a separate analysis for the responses to 'what is important' and the 'self-rated' items for both the North West and Japanese samples. This data reduction technique was used to compress the data to composite dimensions of leadership, distinguishing and describing the most important aspects of leadership and analysing how specific attitudes of leadership were inter-related.⁸ As the pilot questionnaire had over 50 items, this was considered sufficient to provide enough variation along an underlying continuum in the data.

PCA was used as the items had been designed with a specific factor structure *a priori*, which had been informed by the preceding qualitative and quantitative interviews. As a result, each item had already been identified as important to leadership, so patterns of similarity were as important as shared co-variance. Negatively worded items were inverted and orthogonal varimax rotation was applied during the PCA to enable

a clearer conceptualisation of each factor so that the labelling and interpretation of these factors was more reliable.⁸

Scree plots were used to determine the number of important or meaningful components to extract. These plot the variance explained by each successive component (eigenvalue). The number of components extracted was determined by the point of inflection. The components were then labelled by four of the research team (PRB, LO'M, HH and RM) on the basis of their commonality of meaning.

Descriptive tables were then produced to highlight the most important items in the questionnaire for 'what is important' for North West and Tokyo GDPs. After tests for normality, within subject t-tests were then applied to examine for differences between 'what is important' and 'self-rated' to distinguish potential training needs.

The free text boxes were analysed using a form of content analysis for simplicity.¹¹ The researchers read and re-read the text boxes and collated the responses together, based on the similarity of their meaning.¹¹ Representative quotes are provided.

RESULTS

Demographics

The response rate for the pilot questionnaire was low (22.9% and 7.5% for North West of England and Tokyo, respectively). For the sample from the North West, the mean age of

the participants was 45.7 years (range 24–69; SD = 11.3) and the mean number of years since qualification was 22.1 years (range 1–44; SD = 11.6). One hundred and thirty-five (56.9%) were male and 94 (39.7%) were female (eight were incomplete). GDPs from Tokyo had a mean age of 51.2 years (range 35–66; SD = 8.9) and had been qualified for a mean of 24.9 years (range 9–41; SD = 9.6). Sixty-two (82.6%) were male and ten (13.3%) were female (three were incomplete).

Data reduction

The requirements for data reduction were met: both samples had observations that were twice the size of the minimum requirement of 100 observations and had ratios of observations-to-variables that are larger than two. In the North West, two factors for the items that were judged 'what is important' and three factors for the items that had been 'self-rated' accounted for 62.1% and 55.1% of the variance respectively. Across Tokyo, 56.4% of the variance was explained by three factors for 'what is important' and 52.8% of the variance was explained by five factors for 'self-rated' (Table 1).

In terms of what was important, the factors were entitled 'How to lead' and 'How not to lead' for the North West and 'Demonstrating personal qualities', 'Working with others' and 'How not to lead' for Tokyo. The items in the pilot questionnaire that load onto these factors are provided in Table 1. The factors from the PCA for 'self-rated' items were entitled 'Working with others', 'Setting direction' and 'Managing services' for the North West and 'Working with others', 'Demonstrating personal qualities', 'Pragmatism', 'Setting direction' and 'Improving services' for Tokyo.

The top ten items for GDPs from the North West and Tokyo for the question 'what is important' are provided in Tables 2 and 3. There was an overlap between what GDPs from the North West and Tokyo thought were important in leadership, so that half of the items in the top ten were shared. These included the importance of 'Integrity', 'Thanking the team', 'Being open to new ideas', 'Being good at motivating the team' and 'Having a positive attitude during difficult times'; the former two items being the most important characteristic and next most important characteristic for both samples of GDPs.

Statistically significant differences between the scores for 'what is important' and 'self-rated' are provided in Tables 4 and 5 for GDPs from the North West and Tokyo respectively. Of note, 'Providing vision for the team', 'Being assertive', 'Having a positive attitude' and 'Managing resources' had the greatest mean difference. Seventeen items were scored significantly differently by

Table 2 The most highly rated items on 'what is important' for dentists in the North West*

N	Q	Item	Score(NW) (SD)	Score (Tokyo) (SD)
1	27	I think it is important to have integrity	6.21 (1.78)	6.42 (0.85)
2	8	I always thank my team for their work	6.18 (1.72)	6.38 (0.93)
3	48	I work to put the interests of my patients first	6.11 (1.87)	5.94 (1.39)
4	1	I generate respect among my team	6.04 (1.69)	5.80 (1.31)
5	4	I am good at communicating clearly with my team	6.04 (1.85)	5.97 (1.14)
6	5	I am good at building relationships within my team	6.03 (1.73)	5.88 (1.25)
7	43	You should be open to new ideas	5.99 (1.76)	6.08 (0.98)
8	21	I am a positive role model for others	5.96 (1.73)	5.75 (1.23)
9	22	I have a positive attitude even during difficult times	5.96 (1.78)	6.05 (1.14)
10	7	I am good at motivating members of my team to do things	5.94 (1.72)	6.13 (0.97)

*Shaded area represents items that were rated by both groups of GDPs

Table 3 The most highly rated items on 'what is important' for dentists in Tokyo

N	Q	Item	Score (Tokyo) (SD)	Score (NW) (SD)
1	27	I think it is important to have integrity	6.42 (0.85)	6.21 (1.78)
2	8	I always thank my team for their work	6.38 (0.93)	6.18 (1.72)
3	29	Determination is an important quality in a leader	6.28 (0.94)	5.74 (1.74)
4	7	I am good at motivating members of my team to do things	6.13 (0.97)	5.94 (1.72)
5	39	I distribute work appropriately to my team based on the level of their skill	6.08 (1.09)	5.80 (1.79)
6	40	I set the direction for my team	6.08 (1.10)	5.78 (1.81)
7	43	You should be open to new ideas	6.08 (0.98)	5.99 (1.76)
8	22	I have a positive attitude even during difficult times	6.05 (1.14)	5.96 (1.78)
9	41	I provide the vision for my team	6.03 (1.10)	5.78 (1.80)
10	61	I should take my own personal development and learning more seriously	6.03 (1.05)	3.61 (2.52)

*Shaded area represents items that were rated by both groups of GDPs

GDPs from the North West compared to two items by GDPs from Tokyo.

Out of the 237 GDPs in the North West who responded to the free-text questions about clinical leadership, 155 (65.4%) suggested they understood what it meant and 80.6% (191) noted its importance, but many of the examples given related to practice-related activity rather than clinical leadership at a strategic level:

NW160: '*....the clinical leader should determine the practice philosophy and focus....they will also be involved in diagnosis and treatment planning and delegation of clinical duties/work....responsible for leading the team....*'

NW213: '*....clinical leadership defines the way treatment is provided. It decides the focus of the practice in type of treatments*

way of giving this to patients and the technical press and materials....'

NW001: '*....leading the dental team and monitoring less experience members of staff or those having difficulty....*'

NW002: '*....clinical leadership means having a team that has a clear direction and someone has to be responsible for this. Responsible for leading the team....*'

Some were unclear about its meaning, but still located the narrative at a practice level:

NW194: '*....not particularly sure. If clinical leadership means being responsible clinically for one's own standard of clinical care for patients and driving others to the high level of clinical care necessary for the of patients then yes....*'

NW168: '*....I think it means that I set and review clinical standards of work and*

actions by myself and my clinical staff and that ensure that we as a practice meet and exceed the best standards...

Very few GDPs from the North West directly described leadership in terms of working at a strategic level to drive forward changes at a population level:

NW171: *'...an independent individual decision who has no direct or indirect advantage to any commissioning but will help determine where spending should go within dentistry...'*

The understanding of leadership by the GDPs from Tokyo was varied:

JP0121: *'...laying out treatment plan comprehensively, making effort to liaise with multi professions, and being involved maintenance of patient's health condition...'*

JP0709: *'...a person who engages in practice with own clinical philosophy...'*

JP0385: *'...it seems a supervisor has to be in charge of planning and practising the treatment...'*

However, a number of GDPs from Tokyo also expressed clinical leadership in terms of working with other healthcare professionals to deliver more holistic care:

JP0878: *'...local physicians, dentists, nurses and other professionals become the nucleus of regional cooperation and professional collaboration. That facilitate to provide services efficiency and seamlessly...'*

JP0348: *'...it is necessary capability to perform higher clinical quality. It requires in order to get something done with multi professionals...'*

JP0335: *'...dental treatment needs many professional's hands not only dentist's. The ability is required to lead their forces optimum direction efficiently...'*

DISCUSSION

The poor response rate makes any conclusion difficult to infer, but the pilot does provide helpful information to help design a definitive short-form questionnaire.

There were differences between the factors that were derived from the responses of the GDPs in the North West and Tokyo (Table 1). For the question 'what was important', the items were broadly grouped into two main factors for North West GDPs: 'How to lead' and 'How not to lead'. The responses from the GDPs in Tokyo appeared to differentiate between two forms of leadership: 'leadership as the individual' and 'leadership as the relationship'. Two of the three factors being 'Demonstrating personal qualities' and 'Working with others', while the third was 'How not to lead'. This could suggest a difference in the contextualisation of leadership. This difference in the understanding of leadership was also found in an earlier qualitative study among dentists and also

Table 4 Differences between 'what is important' and 'self-rating' in the North West

Q	Item detail	'Important' Mean (SD)	'Self' Mean (SD)	Mean difference (SD)	t-test
21	I am a positive role model for others	5.96 (1.73)	5.45 (1.47)	-0.51 (2.17)	-3.66**
22	I have a positive attitude even during difficult times	5.96 (1.78)	5.08 (1.65)	-0.88 (2.30)	-5.56**
2	I nurture others so that I bring out their potential	5.93 (1.73)	5.27 (1.45)	-0.66 (2.14)	-4.76**
39	I distribute work appropriately to my team based on the level of their skill	5.80 (1.79)	5.08 (1.67)	-0.72 (2.32)	-4.79**
41	I provide the vision for my team	5.78 (1.80)	4.75 (1.71)	-1.03 (2.36)	-6.75**
40	I set the direction for my team	5.78 (1.81)	4.84 (1.67)	-0.93 (2.33)	-6.16**
20	Other people in my team follow me	5.70 (1.72)	5.14 (1.49)	-0.56 (2.17)	-3.98**
55	I am good at managing resources	5.68 (1.90)	4.84 (1.62)	-0.84 (2.42)	-5.31**
47	I like to bring in new ways of doing things with my team	5.47 (1.81)	5.08 (1.52)	-0.40 (2.39)	-2.55*
54	I am good at being assertive	5.46 (1.93)	4.47 (1.65)	-0.98 (2.42)	-6.25**
56	I deliver on budget	5.37 (2.02)	4.78 (1.72)	-0.58 (2.66)	-3.37*
3	I encourage my team to take the lead	5.20 (1.84)	4.91 (1.49)	-0.30 (2.29)	-2.04*
50	I like to be the front-runner for change	5.06 (1.80)	4.67 (1.53)	-0.40 (2.29)	-2.67*
42	Having an entrepreneurial spirit is important	5.04 (1.81)	4.59 (1.69)	-0.45 (2.36)	-2.91*
36	I don't value others in my team	2.54 (2.31)	1.79 (1.50)	-0.76 (2.68)	-4.34**
37	I get agitated when under pressure	2.66 (2.05)	3.49 (1.81)	0.83 (2.62)	4.87**
58	I don't like making unpopular decisions	3.73 (2.17)	4.47 (1.84)	0.74 (2.70)	4.21**

*p <0.05; ** p <0.001

Table 5 Differences between 'what is important' and 'self-rating' in Japan

Q	Item detail	'Important' mean (SD)	'Self' mean (SD)	Mean difference(SD)	t-test
7	I am good at motivating members of my team to do things	6.13 (0.97)	4.38 (1.32)	-1.79 (1.50)	-9.46**
60	I am unreliable at times	2.92 (1.68)	4.41 (1.34)	1.52 (2.03)	5.97**

*p <0.05; ** p <0.001

draws on Hofstede's classical taxonomy of individualist versus collectivist cultures.^{6,12} The PCA also revealed that complex domain structures for clinical leadership, like those found in the NHS Leadership Framework, were not supported.¹³

Despite some differences in the PCA, the most highly rated items were similar across both groups; the two highest rated items for both North West and Tokyo GDPs were identical: 'Integrity' and 'Thanking the team' (Tables 2 and 3). Three other items were in both group's top ten: 'Being open to new ideas', 'Being good at motivating the team' and 'Having a positive attitude during difficult times'. This concurs with earlier research in a clinical setting, where both individual qualities and team cohesion were seen to be important.^{14,15}

Differences were noted in the scoring of items for 'what is important' and 'self-rated' between GDPs from the North West and Tokyo respectively. For the former group, the greatest mean difference was found in 'Providing vision for the team', 'Being assertive', 'Having a positive attitude' and 'Managing resources'. This may highlight future education and training needs for GDPs from the North West. In contrast, there were only two items where there was a statistically significant difference between 'what is important' and 'self-rated' for GDPs from Tokyo. This may be affected by the low response rate or a response bias among the Japanese sample. It has been noted in earlier studies that people from Japan can restrict their responses to mid-points on Likert scales, although this was not evident from the analysis in this study.¹⁶

The response of the North West GDPs in the free-text boxes highlight a different conception of clinical leadership to the one that is articulated in 'Securing excellence in commissioning NHS dental services (2013)'.⁴ The importance of leadership was framed at a practice level and was understood to be about leading the dental team. Very few GDPs from the North West commented on its importance at a strategic level or mentioned LPNs. This was echoed in the Tokyo data and raises the question as to whether leadership *per se* is the best lever to deliver change within the local healthcare system. Since Darzi, leadership in the NHS has been explicitly linked to quality,¹⁷ but the results from this study would suggest that leadership is poorly conceptualised among GDPs at a strategic level. This suggests that there is a need for LPNs to increase their visibility and connect with local practitioners to ensure local services are clinically led, patient focused and deliver outcomes that improve the quality of care.⁴ Equally, GDPs from Japan are expected to develop new roles as members of home care teams in the last decades, yet few of them related the concept of leadership to their expected roles in developing comprehensive community care.¹⁸ As a result, there appears to be a role for those responsible for education and training to develop and frame leadership within this broader strategic narrative for both North West and Tokyo GDPs. However, it may also suggest that other levers should be used to deliver change, for example, financial incentives.¹⁹ If future services are to be responsive to need, be equitable, effective, socially acceptable and efficient, it will require financial encouragement to re-orientate services appropriately,²⁰

relying on leadership alone may not be sufficient.

To the extent that leadership can influence change, this study has shown what GDPs consider to be the most important items and domains. It has also revealed how GDPs rate themselves against the same criteria. This information will now be used to construct a definitive short-form questionnaire, using the most highly rated scores and the factor loadings to remove unnecessary items. This will enable the domains of leadership to be further tested empirically and help identify training needs.

The authors would like to acknowledge and thank the North Western Deanery and the Great Britain Sasakawa Foundation for their financial support to facilitate the distribution of the pilot questionnaires for this study. We'd also like to acknowledge the input of the Tokyo Dental Association.

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