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Identifying Quality Indicators for Health Visiting using Group Concept Mapping.
--Manuscript Draft--

Abstract:	Background The Welsh Government Healthy Child Wales Programme supports parenting and healthy lifestyle choices through evidence-based NHS preventative early intervention measures, advice, and guidance for every child (0-7 years) in Wales. Health visitors deliver the programme across Wales. There are no established indicators to assess service quality or programme success. The aim was to generate health visitor consensus from across Wales on quality indicators for assessing health visiting. Methods Rapid review of health visiting quality indicators followed by Group Concept Mapping - a three-phase, integrated consensus mixed method using face-to-face workshop and online data collection. A purposive sample of 43 health visitors was recruited from across Wales. Findings Rapid review identified 49 quality indicator statements for UK health visiting, and home visiting/public health nursing internationally. These were categorised as: 'child', 'parent/family' and 'health visiting service'. Following rapid review and the Group Concept Mapping brainstorming phase, 118 quality indicator statements were identified. In the Group Concept Mapping sorting phase, a quality indicator cluster map was generated from the 118 statements giving 5 elements - 'Child Outcomes', 'Compliance to Healthy Child Wales Programme', 'Health Visitor Management', 'Family Resilience' and 'Public Health Priorities'. In the Group Concept Mapping rating phase, 54 quality indicators were identified as most important and having most impact. Interpretation Reliability and validity mechanisms indicate a good relationship between data input, the similarity matrix, and distance between points on the map. This gives confidence that the results may be used to assess the quality of health visiting services in Wales.

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ABSTRACT

Background: The Welsh Government *Healthy Child Wales Programme* supports parenting and healthy lifestyle choices through evidence-based NHS preventative early intervention measures, advice, and guidance for every child (0-7 years) in Wales. Health visitors deliver the programme across Wales. There are no established indicators to assess service quality or programme success. The aim was to generate health visitor consensus from across Wales on quality indicators for assessing health visiting.

Methods: Rapid review of health visiting quality indicators followed by Group Concept Mapping - a three-phase, integrated consensus mixed method using face-to-face workshop and online data collection. A purposive sample of 43 health visitors was recruited from across Wales.

Findings: Rapid review identified 49 quality indicator statements for UK health visiting, and home visiting/public health nursing internationally. These were categorised as: 'child', 'parent/family' and 'health visiting service'. Following rapid review and the Group Concept Mapping brainstorming phase, 118 quality indicator statements were identified. In the Group Concept Mapping sorting phase, a quality indicator cluster map was generated from the 118 statements giving 5 elements - 'Child Outcomes', 'Compliance to Healthy Child Wales Programme', 'Health Visitor Management', 'Family Resilience' and 'Public Health Priorities'. In the Group Concept Mapping rating phase, 54 quality indicators were identified as most important and having most impact.

Interpretation: Reliability and validity mechanisms indicate a good relationship between data input, the similarity matrix, and distance between points on the map. This gives confidence that the results may be used to assess the quality of health visiting services in Wales.

Key words:

Health Visiting, Public Health Nursing, Quality Indicators, Group Concept Mapping, Mixed Methods.

Introduction

Public health nursing in the UK

The Nursing and Midwifery Council (UK regulator) maintains a separate part of the register for registered nurses and midwives working in public health roles who have completed approved specialist community public health nursing (SCPHN) courses. SCPHNs work with individuals and populations (determined by age, gender, geography, workplace, ethnicity, or social circumstances), and are regulated separately for this reason[1].

Health visitors are SCPHNs who provide an evidence-based, proactive, universal, public health service for individuals, families, groups, and communities. They search for health needs, stimulate awareness of health needs, influence policies affecting health, and facilitate health-enhancing activities[1]. Part of their work includes reducing health inequalities for children 0-5 years via a universal service, and targeting additional resources according to need[2]. There are three intertwined components to HV practice; relationship-development (between HV and parent, and parent and child), home visiting, and skilled assessment and monitoring of family needs[3-5].

UK health policy is devolved to the four constituent country governments (England, Wales, Scotland, and Northern Ireland)[6-7], as is HV provision[8-11]; service management varies accordingly. The present study was conducted in Wales; however, we anticipate that findings may be transferred to other HV services in the UK and public health nursing services internationally. NHS HVs in Wales deliver the Welsh Government 'Healthy Child Wales Programme'[12] to families with children under 5. HCWP supports parenting and healthy lifestyle choices through universal evidence-based preventative and early intervention measures, advice, and guidance for families. There are no established outcome tools or quality indicators to assess the quality of HV services in Wales at present.

Why is this study needed?

Healthcare quality is, "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and care consistent with current professional knowledge"[13]. Developing indicators for quality assessment helps improve the quality of care provided to patients and populations. They may be used to identify gaps and areas for improvement, measure care quality, understand how to improve care, demonstrate quality care, and commission high-quality services[14].

Establishing HV quality indicators will help service providers, commissioners and government to assess the likelihood of meeting policy aims (e.g. reducing health inequalities) by assessing the quality of care delivered to families, and determining the impact of care provided.

The National Institute for Health and Care Excellence[15] issued quality standard QS128 for promoting health and well-being in under 5s for services including health visiting, childcare and early years education, and early intervention services in children's social care. It has two quality statements;

1. *Parents and carers of children under 5 have a discussion during each of the 5 key contacts about factors that may pose a risk to their child's social and emotional well-being.*
2. *Children have their speech and language skills assessed at their 2-2·5 year integrated review.*

Service quality is assessed for each statement using locally collected data, focusing on outcomes manifesting later in children's development (e.g. school readiness). These pose a problem for HV as retrospective use of data cannot be used to assess current service quality (e.g. school readiness at age 5 to reflect the quality of current birth visits).

UK research has identified areas of concern and priority needs for HV services[16]; these include infant stimulation, domestic violence, and children's speech and language proficiency. Consensus methods could be used to identify which priority areas quality indicators should assess. NHS England has

produced HV service delivery metrics to assess English services. These include percentage of mothers receiving antenatal visits, number of HV new birth visits, and HV completion of 12 month and 2-2·5 year development reviews[17-18]. HV knowledge and use of guidelines in practice to assess needs and prioritise families has also been suggested[19].

International studies have evaluated home visiting programmes provided by a range of professionals[20-21]. They used outcome measures including child abuse and neglect (as reported by child protection services, and self-reported), conflicts tactics scale, levels of maternal depression/anxiety, developmental delays, maternal attachment, and maternal sensitivity. Health assessment has also been used including physical growth assessment, presence and extent of dental caries, number of hospitalisations, and immunisations records/compliance with country immunisation policy.

From this it appears that there are no agreed established outcome tools or quality indicators available to assess HV service quality or the success of HCWP.To address this, an innovative, mixed-methods design was used to generate HV consensus about what quality indicators may be used for HV services.

Research in context

Evidence before this study

There is limited literature on quality indicators for health visiting, public health nursing, and home nursing.

UK organisational responses include the NICE quality standard [QS128] for promoting health and well-being in under 5s using local data collection, particularly focusing on outcomes later in the child's development (e.g. school readiness, antisocial behaviour). It was created to contribute to outcomes outlined in the 2016-19 Public Health Outcomes Framework for England. NHS England devised health visitor service delivery metrics based on percentage of mothers receiving antenatal visits, new birth visits and completed 12-month/2-2·5 year development reviews.

Work by Cowley et al, Appleton and Cowley, and Bryar et al suggest areas where quality indicators should be identified, particularly for identifying health needs and prioritising families requiring extra support.

International studies have evaluated home visiting programmes with a range of professionals. They used outcome measures including; child abuse and neglect (as reported by child protection services, self-reported), conflicts tactics scale, levels of maternal depression/anxiety, developmental delays, maternal attachment, and maternal sensitivity. Health assessment has also been used, including assessment of physical growth, number of dental caries, number of hospitalisations, and up-to-date immunisations.

Search terms: health visitor, health visiting, quality, quality indicators, metrics, data, caseload, quality standard, health visitor service and health visitor staffing.

Databases searched: CINAHL, Web of Science, Scopus Online, NICE Guidelines.

Inclusion criteria: Published since 01/01/2000, English language papers, research articles, literature reviews, overviews.

Exclusion criteria:

Article consisting of a case study of a single child (usually investigating effects of psychotherapeutic counselling)

Article focused on bereavement in war situations or in very different country contexts from the UK (such as children bereaved by AIDS in Africa)

Article dealing with adolescent suicide or suicide prevention

Article consisting of commentary rather than evidence.

Literature review took place 15 April 2019-22 May 2019

The quality indicators used for the review were kept purposefully broad so that a wide scoping exercise could take place including grey literature and policy papers.

Added value of this study

This study adds value to the existing literature by contributing for the first time, systematically generated evidence from service providers [health visitors and health visitor managers] on what they consider quality indicators for health visiting to be.

Implications of all the available evidence

Implications for practice: health visitors and health visitor managers can use the findings to review current working practices and caseload numbers to maximise the delivery of high quality services to families of children under 5 years.

Implications for policy: the findings provide the means by which policy makers can evaluate the successful implementation of policy and identify areas for further development or revision.

Implications for future research: health care is part of the devolved responsibility of Welsh Government. Future research may replicate the process in the other constituent countries of the UK (Scotland, Northern Ireland and England), and health care systems in other countries.

Methods

Study design and participants

A mixed-method study comprising two integrated approaches was used to capture consensus data – a workshop, and GroupWisdom™ online software (Figure 1)[22]. The University of South Wales Faculty of Life Sciences & Education Ethics Subgroup gave ethical approval on Monday 23rd September 2019 (Reference: 19ME0901LR). A theory and concept focussed purposeful sampling strategy was used to identify participants (health visitors) able to give meaning to the quality indicators they used in their practice[23]. All participants gave written informed consent.

The study aim was to generate quality indicators and achieve consensus with health visitors about which indicators to use for assessing health visiting services in Wales. A rapid literature review was conducted in April 2019 and potential indicators identified. A workshop was hosted as part of the 2nd National Nurse Staffing Conference in Wales on 26th September 2019 where health visitor participants were asked to brainstorm quality indicators; these were added to those identified in the rapid literature review. Participants were asked to rate each quality indicator on two rating scales – importance, and impact on service delivery. Participant demographic information, brainstorming data and individually completed rating scales were added to the online GroupWisdom™ software. Health visitors unable to attend the workshop were also invited to participate. All health visitors were invited to group and label the quality indicators identified in the brainstorming phase, and complete the rating scales if not already done so (Figure 1). The study was completed on 21st January 2020.
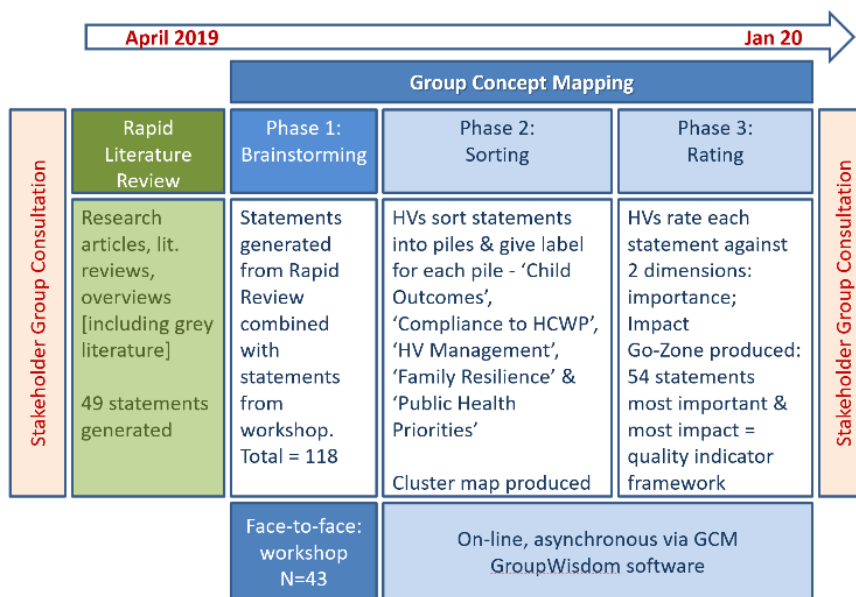
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Figure 1: Study design, rapid literature review preceding the 3-phase group concept mapping via workshop and online software.

The three phases of Group Concept Mapping

Phase 1: Brainstorming (workshop)

Participants attending the 2nd National Nurse Staffing Conference (26th September 2019) were invited to participate in a face-to-face workshop. They worked in groups (*n* = 4-6) to generate statements in response to the focus prompt:

> *"An indicator of the quality of health visiting services is…"*

All participant statements were collated in the workshop, and combined with the quality indicators identified from the review. The quality indicators from the review were preloaded onto a PowerPoint slide and numbered 1-49. The workshop quality indicators were transcribed immediately onto PowerPoint for all participants to see and numbered 50-118. Statement cleaning took place in the workshop with the participants; clarification of words and abbreviations was sought. Statements were considered for reframing if they included two or more statements.

Phase 2: Sorting (online)

Statements were uploaded onto GroupWisdom™ online Group Concept Mapping software. Workshop participants were invited to take part in online statement sorting following the event. Also invited were health visitors from the Family Resilience Assessment & Instrument Tool (FRAIT) Community of Practice and senior health visitor managers across Wales who would be able to provide expert meaning in context.Each consenting participant received an online software link with a unique username and password. On entry to the GroupWisdom™ site, each participant answered 3 demographic questions used later for data analysis - What is your current primary role? (health visitor, manager, other); In which Welsh health board do you work? (List of 7 health boards); How long have you worked as a health visitor? (Years).

Participants sorted all the statements into groups and gave each group a unique label using an online drag-and-drop table-top sorting screen. Each online stage took 30-40 minutes to complete[24]. This stage was open for 3 weeks during November/December 2019; telephone support was available on request.

Phase 3: Rating (workshop & on-line)

Participant rating data from the workshop were uploaded manually by the research team. All participants (workshop and on-line only) rated each study statement on two 5-point Likert scales - 'Importance'and 'Impact on service delivery'. This stage was open for 4 weeks until 17th January 2020.

Role of the funding source

CW and ME were funded through PRIME Centre Wales to develop research capacity in nursing, midwifery and health visiting through the Community Nursing Research Strategy for Wales[25]. This is infrastructure funding via Health & Care Research Wales. The aim of the CNRS is to create opportunities for all Nurses and Midwives in Wales to be involved in research for the development of evidence-based practice.

Analysis

Analysis included: descriptive statistics of participant demographics, development of a similarity matrix from sorted statements (number of participants sorting statements similarly), multidimensional scaling of similarity matrix (produces a point map where each statement is allocated a point on an XY axis), hierarchical cluster analysis of statements (produces a cluster map with labels), cluster rating maps of importance and impact on service delivery, and a Go-Zone report. Analysis of the Go-Zone report produced a framework of quality indicators for health visiting.

<center>Results</center>

The purposeful sample recruited 43 health visitors - 18 health visitor practitioners, 15 service managers, 6 others - 'professional lead', 'directorate lead', 'Flying Start Health Manager', 'health visiting operational manager', 'senior health visiting nurse', and 'team leader'. Only 4 consenting participants did not respond (Figure 2). Health visitors had been practising 2-34 years (mean15·9; median 17). All health boards were represented (Figure 3).
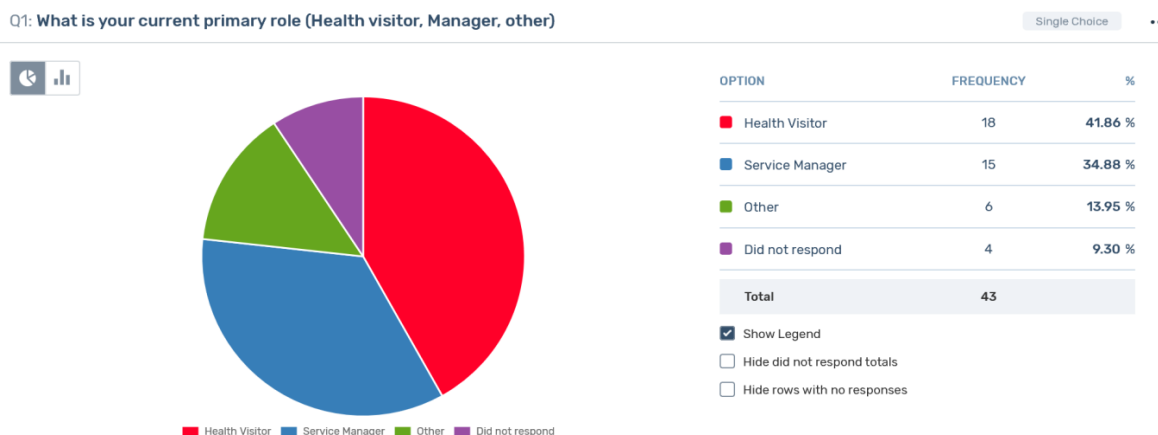

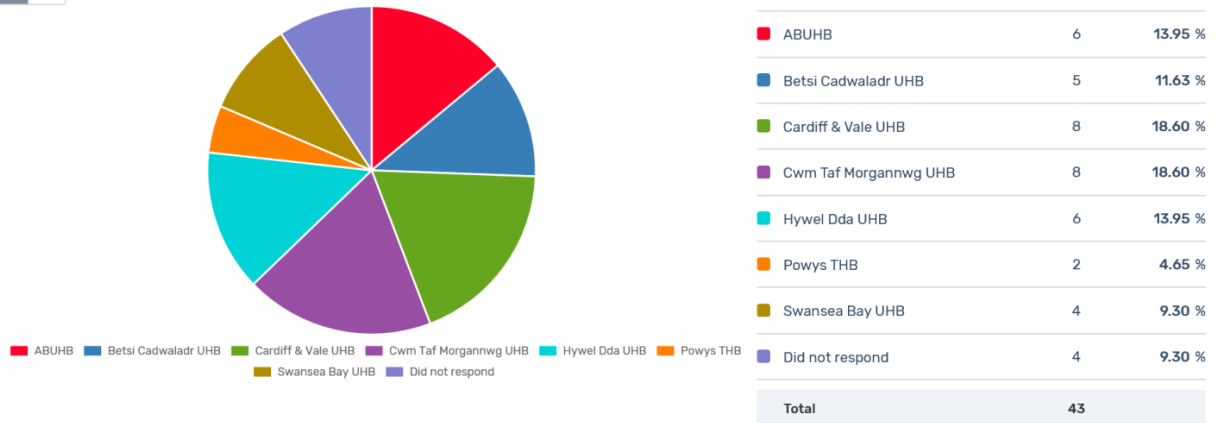Figure 2: Primary role of participant

Figure 3: Health board representation in study.

Of the thirty-nine (n=39) participants who completed data collection, twenty (n=20) completed the sorting/labelling phase, ten each from the workshop (n=10) and additional health visitors (n=10) who did not attend; thirty four (n=34) completed the rating scales, mostly from the workshop (n=29) as opposed to additional health visitors who did not attend (n=6).

The GroupWisdom™ software generated a statement point map with a final stress value of 0·2341 after 7 iterations (Figure 4). The acceptable range is 0·10-0·35[26], which is considered similar to reliability and implies a good relationship between data input, similarity matrix (developed from the grouping task) and distance on the map.

Figure 4: Point map of quality indicator statements

The quality indicator cluster map (Figure 5) consisted of five clusters from 118 statements. Each cluster name is generated from the health visitor participants completing the sorting phase. The distance between clusters demonstrates their conceptual relationship; for example, Compliance to HCWP is closer to Health Visitor Management, and Child Outcomes than it is to Public Health Priorities, and Family Resilience.
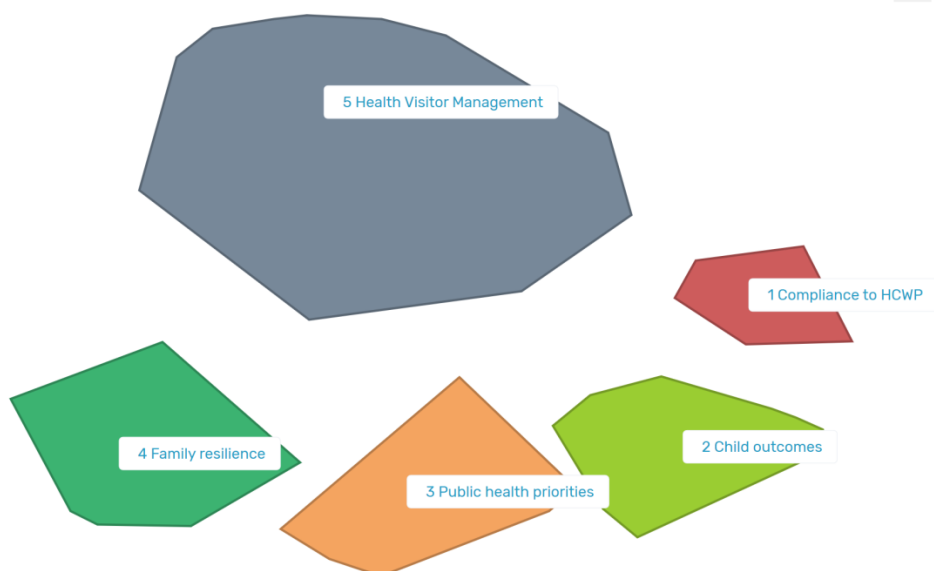

Figure 5: Quality Indicator cluster map of statements

Table 1 shows the distribution of statements to each cluster accompanied by the cluster average rating for importance and impact on service delivery. The whole list of quality indicator statements and their individual ratings is not reported here.

Construct	Child Outcomes	Compliance to HCWP	Health visitor management	Family Resilience	Public Health Priorities
No. of Statements	37	16	35	13	17
Ave. Rating of Importance	4·25	4·22	4·18	4·00	3·97
Ave. Rating of Impact on Service Delivery	3·65	3·89	3·98	3·59	3·55

Table 1: Distribution of total no. of statements with average rating scales per cluster.

The Go-Zone report (Figure 6) shows quality indicators above or below the mean across two rating criteria – importance, and impact on service delivery. Figure 6 shows green zone quality indicators that are considered most important and have most impact on service delivery. Orange zone quality indicators are most important but considered to have least impact. Yellow zone are quality indicators that are least important but considered to have impact on service delivery. Grey zone quality indicators are least important and have least impact on service delivery. Quality indicator statements above the importance mean (4·16) were rated most important and located in the orange and green zones. Statements above the impact on service delivery mean (3·76) were rated as having most impact on service delivery and are located in the green and yellow zones.
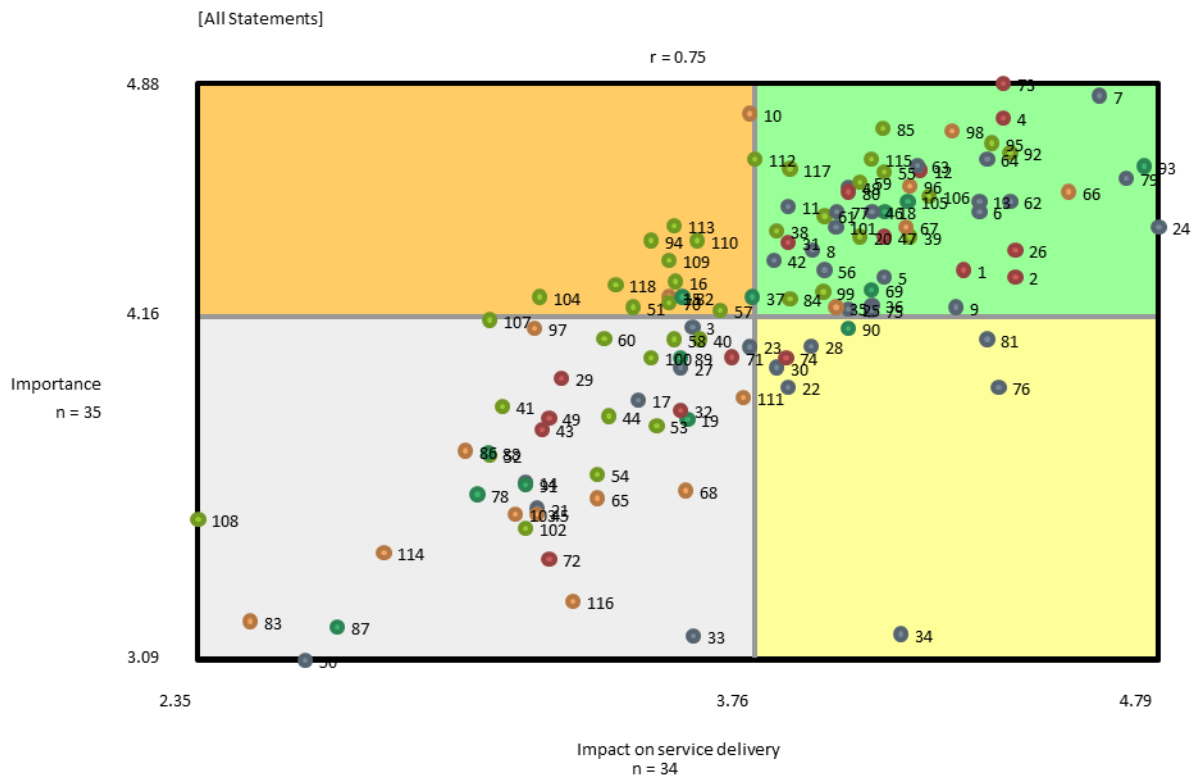
Figure 6: Go-Zone report shows quality indicators rated in relation to importance and impact on service delivery.

There are fifty-four (n=54) quality indicators in the green zone. Figure 7 shows the top twenty (n=20) quality indicators considered most important with most impact on service delivery in the Go-Zone report. The rating scores for importance and impact on service delivery are presented with the score average. Eight quality indicator statements are from the Health Visitor Management cluster (n=8), one from Family Resilience (n=1), four from Compliance to HCWP (n=4), three from Public Health Priorities (n=3), and four from Child outcomes (n=4).

Cluster	Statement #	Statement	Impact on service delivery	Importance	Mean
HV management	7	**Well trained staff**	**4.6364**	**4.8438**	**4.7401**
Fam Res	93	**Vulnerable children & families**	**4.75**	**4.625**	**4.6875**
HV management	79	**Recruitment & retention**	**4.7059**	**4.5882**	**4.64705**
Compliance to HCWP	73	**New birth visits completed %**	**4.3939**	**4.8824**	**4.63815**
HV management	24	**Staff off with work related stress**	**4.7879**	**4.4375**	**4.6127**
Compliance to HCWP	4	**Completing primary birth visit 10-14 days**	**4.3939**	**4.7742**	**4.58405**
PH priorities	66	**Safeguarding child protection**	**4.5588**	**4.5455**	**4.55215**
Child outcomes	92	**Parent mental health**	**4.4118**	**4.6667**	**4.53925**
Child outcomes	95	**Perinatal & PND**	**4.3636**	**4.697**	**4.5303**
HV management	64	**Staff satisfaction**	**4.3529**	**4.6471**	**4.5**
PH priorities	98	Domestic violence	4.2647	4.7353	4.5
HV management	62	Staffing ratio to allow for compliance with Health Child Wales Programme	4.4118	4.5152	4.4635
HV management	13	Effective teams	4.3333	4.5152	4.42425
Child outcomes	85	Early identification of PND	4.0882	4.7419	4.41505
HV management	6	Evidence based assessment tools	4.3333	4.4839	4.4086
HV management	63	Patient [parents] satisfaction	4.1765	4.6286	4.40255
Compliance to HCWP	12	Early detection of problems	4.1818	4.6129	4.39735
Compliance to HCWP	26	Offered all Healthy Child Wales Programme contacts	4.4242	4.3636	4.3939
Child outcomes	106	Infant mortality	4.2059	4.5313	4.3686
PH priorities	96	Parenting	4.1563	4.5625	4.3594

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Figure 7: Top 20 quality indicators considered to be most important with most impact on service delivery by health visitors in Wales

Discussion

Using the two-fold approach to data generation allowed us to work with HVs from across Wales and helped overcome the rural-urban divide in access and engagement. Working in this way maximises the potential for reliability and validity of findings.

Combining the results from a rapid literature review with the GroupWisdom™ on-line asynchronous data generation software programme allowed us to incorporate an international perspective and check it against the particular conditions in Wales. This way of working offers the possibility of building an international evidence-based set of quality indicators that may be fitted to specific local conditions.

The reliability and validity mechanisms of the process indicate a good relationship between data input, the similarity matrix from the sorting phase, and distance on the map between points. This gives confidence that the results may be applied to the delivery of health visiting in Wales for quality indication purposes.

The concept of Health Visitor Quality Indicators has 5 constructs - Child Outcome, Compliance to HCWP, Health Visitor Management, Family Resilience, and Public Health Priorities. Quality indicators from these constructs located in the Go-Zone green section (n=54) are quality indicators considered by HVs in Wales as most important and have most impact on service delivery. This number of indicators would be too unwieldly for practical purposes. Therefore, we have isolated the top twenty (n=20) quality indicators considered by HVs to be the most important and have the most impact on service delivery.

In conclusion the study has been successful in its aim to generate consensus with health visitors about which quality indicators should be used to assess health visiting service delivery in Wales. In future we should continue to consider using a combination of face-to-face and on-line data generation techniques when establishing pan-Wales initiatives to overcome the rural-urban divide on access and engagement. Combining the products of rapid reviews with primary data generation allowed us to build international evidence for the specific conditions of Wales. Our next steps are to discuss the findings with stakeholders and consider how these quality indicators may be used in practice.

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Conflict of Interest statement

No conflicts of interest declared.

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Individual contribution

Carolyn WALLACE, University of South Wales, PRIME Centre Wales.

Methods lead, involved in the design, analysis and reporting of the study.

Megan ELLIOTT, University of South Wales, PRIME Centre Wales.

Involved in the design, analysis and reporting of the study. Megan is in the early stage of her research career and this provided an opportunity to experience all aspects of the GCM process.

David PONTIN, University of South Wales.

Health Visitor lead, involved in the design, analysis and reporting of the study.

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