The medical field is moving towards "evidence based medicine". Empirical diagnosis and treatment is the order of the day, and all interventions are suspect unless there is enough "proof", usually in the form of rigorous research of their efficacy. When an intervention seeks to develop replicable models to improve quality of care, there is a demand for stringent evaluation. If this intervention includes a component of attitudes and behavior change, evaluation becomes challenging because it is difficult to reliably assess these changes.

This paper describes the development of an instrument designed to assess the efficacy of an intervention focused on behavioural and attitudinal change amongst employees in a public health care system.

Project background:

In 2001, an ambitious project was launched in Mumbai by the Municipal Corporation of Greater Mumbai (MCGM) and the Society for Nutrition, Education and Health Action (SNEHA) called the "City Initiative for Newborn Health" (CINH). Its objective is to lower the Neonatal Mortality Rate (NMR) in the urban poor. The neonatal stage (the first four weeks of life) is the most vulnerable stage for human survival. The neonatal mortality rate (NMR), defined as the death of a live born infant within 28 completed days of birth per 1000 (live and still) births, is regarded as a sensitive index of health statistics. India contributes 30% of the world's burden of neonatal mortality[1], with an NMR of 63[2]. The NMR for Mumbai is estimated to be 24. These figures are worse for the poor, whether they live in urban or rural areas.

The Municipal Corporation of Mumbai is the body primarily responsible for healthcare in the city. It has an impressive infrastructure, with three tertiary care hospitals (providing super-specialty care with modern ICU's), 14 General Hospitals, 26 Maternity homes (providing routine maternity antenatal and postnatal services) and 167 Health Posts (which are community outreach centers). However, when seen in comparison to the growing population, this is inadequate.

While it is apparent that one of the reasons for the current NMR is inadequate services, the less obvious reason is the under-utilization of these services[3]. A study conducted in Dharavi slums showed that the services are not fully utilized because they are seen as "unapproachable"; the reasons for which are: a) Unfriendly attitude of health care staff; b) a lack of sensitivity to women; and, c) unavailability of emergency services after 4.00 pm. (at Maternity homes and Health Posts)

On the other hand, the behaviour of health care staff employed in the public health care system is also not helpful. Qualitative research identified that there were three main areas where

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[1] "State of India's Newborns", 2004, Government of India, WHO, UNICEF, The World Bank and the National Neonatology Forum, New Delhi.

[2] **UNICEF,** http://www.unicef.org/infobycountry/india_statistics.html

[3] MaRS, 2004, "Base Line Survey in Dharavi among Rescent Mothers and Currently Pregnant Women", Unpublished report, SNEHA Mumbai.

improvement was desirable; these were, Attitude to work, Approach to people, and Attitude to the workplace[4].

The project is unique because it includes both, improving the "technical quality" (i.e., the standard of care received), as well as changing the "attitudes and behaviours" of the care givers. The initiative's primary strategies are: to encourage change through participation, self-sustaining group activities, ownership, and Appreciative Inquiry (AI). The initiative places great emphasis on a strategy to change behaviour and attitudes, as there seems little to be gained by enhancing existing services unless they are fully utilized. The intervention that was identified to achieve this change was Appreciative Inquiry.

Appreciative Inquiry was developed by David Cooperrider and Suresh Srivastava at Case Western Reserve University, USA, in the 1980's[5]. It was primarily conceived as a method for system intervention and transformation. It is now used in large corporate and educational organizations as well as in the development sector and in community work. AI has also been used successfully to bring about change in the health care sector in Nepal and other developing countries[6].

The fundamental philosophy of AI is to shift the focus from a *problem oriented* approach to a *possibility oriented* one. It looks at the existing strengths of an organization or community and focus on positive attributes as a basis for creating a desired future. It is also highly participatory and democratic, both of which encourage ownership and sustainability. This made it highly suitable for the approach of CINH.

We had previous experience with using this approach in six Maternity Homes of the MCGM in the years 2000-01. The impact of using Appreciative inquiry on the approach of the people to their work was impressive enough to justify a larger canvas for implementation. There was more cooperation among staff, and more sensitivity towards the patients. There was also more initiative taking towards improvement of service delivery. However, this was not formally assessed or published.

The challenge of evaluation:

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[4] "Final Report" Formative Research AI, 2005, CINH Unpublished Report, SNEHA Mumbai.

[5] Cooperrider, D. L., & Srivastva, S. ,1987, "Appreciative Inquiry In Organizational Life". In W. Pasmore & R. Woodman (Eds.), *Research In Organization Change and Development* Vol. 1, pp. 129-169. Greenwich, CT: JAI Press.

[6] Allan Rosenfield and Deborah Maine, 2001, 2003. "Making Safe Motherhood a Reality" Report, Averting Maternal Death & Disability (AMDD) Program, Joseph L. Mailman School of Public Health, Columbia University, New York

Evaluation of interventions is becoming important because Public health programs are being increasingly asked to demonstrate their effectiveness to justify the expenditure on them[7].

There is a marked lack of published research on the evaluation of AI[8]. Typically, evaluation of AI is reported as a case study of the extent to which the issue (the subject of the inquiry) is resolved, or a vision is achieved. Bushe and Kassam have conducted an excellent meta-analysis of 21 case studies, comparing methodologies with available published outcome indicators for each case[9]. They found out that AI was transformational only when it fulfilled the core principles on which AI is based.

We could trace only three quantitative studies on the impact of AI. All were randomized controlled trials comparing group(s) receiving AI, or another intervention and a control group. All showed that AI achieved better results than the control group, and two showed better results with AI than with the standard intervention.

The CINH project is using AI to bring about a change in the attitudes and behaviour of health care staff of the BMC. To evaluate the intervention, we have designed a randomized controlled trial. Eighteen Maternity homes (MH) which offer fairly standardized services for normal pregnancy and labour, have been randomly assigned to receive AI or no intervention. The change in behaviour will be measured by a before-after inventory.
This paper describes the development of this inventory and its reliability and validity.

Method

The objective of the research was to develop an instrument that could measure the efficacy of the proposed intervention using appreciative inquiry (AI). The difficulty lay in the fact that the already existing instruments were not adapted to the specific population that was to be assessed.
To overcome this hurdle, it was decided to develop an instrument that would be reliable and valid for the population to be assessed. The development of the instrument occurred in two distinct phases. These are described below.

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[7] Askew I, Matthews Z, Partridge R., 2001, "Going Beyond Research". Southampton: FRONTIERS, Opportunities and Choices, Safe Passages.
Tiedemann M., 2003, "Moving Research into Practice" FHI initiative seeks to bridge the gap between findings and their use. Network: Family Health International.

[8] Bushe, G.R. & Coetzer, G. 1995 "Appreciative Inquiry As A Team Development Intervention: A Controlled Experiment". *Journal of Applied Behavioral Science*, 31:1, 13-30.
Jones, David A. , 1998. "A Field Experiment in Appreciative Inquiry". *OD Journal, 30*(4)

[9] G. R. Bushe and Aniq F. Kassam, 2005, "When Is Appreciative Inquiry Transformational?" The Journal of Applied Behavioural Science, Vol. 41 No 2, 161-181.

Phase I

In this phase of the instrument development, the task was to decide exactly which dimensions of behaviour would be impacted by the AI intervention. As mentioned earlier, since the intervention was to be made for persons working in the public health care system, it was important to weed out those dimensions that we believed would be actually influenced by other variables such as changes in infrastructure, systems and procedures within the health care system, etc.

A panel of five investigators began by attempting to answer the question: *"What changes do we expect to see in the people after the AI intervention?"* The responses were collated and were then grouped by the same panel. The responses were grouped into five categories. The categories were: *Interpersonal relations*, *Systemic factors*, *Values*, *Attitudes*, and a catch-all category *Miscellaneous*. This last category had elements of leadership, teamwork, and conflict resolution.

Following the grouping of the responses, the panel then began to generate items that could be used to assess these changes. More than 600 items were thus generated. These were then examined for repetition, and the ease of translation into Hindi and Marathi as these were the only languages understood by most of the population to be assessed. Items that were deemed to be repetitive or were difficult to understand were excluded from the inventory. The ease of comprehension was a critical aspect of the inventory as a large proportion of the respondents would have a low educational status or would be completely illiterate. After exclusion, 112 items were retained for testing in Phase II of the study.

Phase II

In this phase of the study, the 112 items were first scrutinized for face validity. The responses were phrased in a manner that the inventory could be used as a self-report instrument or could be interviewer administered as well. This was important so as to take into account the semiliterate and illiterate respondents.

While most self-report instruments typically "reverse" some items to preempt response bias, it was decided to phrase all items in the same "direction" for ease of comprehension and to prevent confusion for the respondents mentioned above.

It was also important to have a response format that would be easy to understand for respondents with low educational status. We believed that the traditional Likert and Semantic differential scales would not be easily understood by *all* respondents. Consequently, it was decided to use a modified semantic differential scale where respondents were simply presented an *agree-disagree* continuum; they had to draw a line between the two anchor points to indicate the extent of their agreement/disagreement with the particular item. The actual length of the line (in cm.) was used as the value indicating the degree of agreement/disagreement.

The items retained were translated into Hindi and Marathi. Back-translation was used to verify the reliability of the translations. The translated items were then administered to a sample of 50 respondents from different health care institutions.

Results

Completed inventories were received from 40 respondents. However, incomplete inventories were also included in the analysis in the interests of conserving data. The items for each of the five dimensions mentioned above were examined for their psychometric properties.

Items 1-44 were predicted to assess the dimension of interpersonal relations. Factor analysis of these items revealed 3 factors that cumulatively explained 48.7% of the variance in the responses. Factor I consisted of 10 items that assessed the extent to which the individual treats colleagues and patients with *Respect*. The items had an internal consistency of 0.86 indicating a high level of homogeneity amongst the items. The scale consisted of items such as: "*I treat my junior staff with courtesy*", "*I ensure the privacy of my patients while treating them.*" Factor II consisted of 11 items that assessed the extent to which the individual expressed *Concern and encouragement* towards peers and patients. The internal consistency for items in this factor was 0.79. Some of the items in this scale were "*I show appreciation when my patients follow instructions*", "*I show concern in the way I talk to my patients.*" The nine items making up Factor III assessed aspects of *Communication with others*. The scale had an internal consistency of 0.89. This scale had items like "*I communicate with patients in a manner they understand*".

Forty five items made up the scale assessing the dimension of attitude. Factor analysis revealed two factors that explained a cumulative variance of 41.2% in the responses. Factor IV consisting of eight items assessed the individual's *Attitude to Work*. The scale had an internal consistency of 0.91. In this scale there were items like "*I hold myself accountable and responsible for the work I am assigned.*" Factor V had twelve items assessing the individual's *Attitude to Workplace*. The internal consistency of this scale was 0.85. Items such as "*I find it stimulating to work here*", were included in this scale.

A final factor emerged from items 90-112. This factor made up of 9 items assessed the dimension of *Supportive Supervision*. That is, the extent to which an individual experienced support from superiors and was able to provide support to juniors and peers. The 12 items in this factor had an internal consistency of 0.88. This scale had items like "I support my colleagues when they deal with difficulties at work".

Collectively, 65 items were retained from the 112 items that were pilot tested. From these 65 items two inventories were created. The first had all 65 items and was to be used for doctors and nurses. The second inventory of 44 items was to be used for other staff of the hospital. The reduction in the items was necessitated by the fact that other staff (such as ward boys, etc.) would not have been able to respond to these items. These included items such as " *I attend workshops, seminars etc to improve my skills", " I regularly visit my patients in the ward".*

Discussion

The CINH project was launched in March 2004, by SNEHA and the BMC, with the objective of increasing the survival of newborns. It also aimed to develop a replicable and sustainable model for health care of mothers and infants in an urban setting. The project include both, improving the "technical quality" as well as changing the "attitudes and behaviours" of the care givers.The intervention chosen to achieve a change in the attitude of the staff towards their work was Appreciative Inquiry (AI). The project demanded rigorous evaluation of the outcome.

This paper reports on the development of an inventory to assess the attitudes of employees in the public health care system in Mumbai city. The development of this inventory was part of a larger project to assess the impact of an AI intervention with this section of employees, the purpose of which was to create attitudinal and behavioural change. There are several aspects to this report that merit especial attention.

This study is one of the few that attempt to make an objective, empirical effort to assess the impact of AI in the context of a public health care system. There are few studies reported in the international literature and, to our knowledge, the only study of its kind being done in India.

The development of the instrument has especially taken into account the socio-demographic characteristics of the respondent population. Rather than use "standard" instruments that assess attitudes, we decided to develop our own instrument so that we could ensure psychometric robustness for this particular population. We also developed a response format that was easy to understand and use with even illiterate persons.

The instrument has demonstrable construct validity and internal consistency, even the translated versions. This provides a ready tool for other researchers who may wish to use it in other contexts as well.

The above points notwithstanding, there are some shortcomings of the inventory that we are aware of as we proceeded in its development.

The reduction in the number of items in the inventory for the staff with a lower literacy status can impact the reliability of the instrument. Also, while we have assessed the internal consistency of the various subscales, there is, as yet, no data available on the differences (if any) in the reliability estimates of the scale when it is used as a self-report instrument as compared to when it is interviewer administered. We also do not currently have data on inter-rater reliability of the scale when it is interviewer administered.

The "uni-directional" nature of items could also have resulted in a response bias during the pilot testing. However, the items had to be framed in this way to avoid confusing particular sections of the respondents.

This inventory did not have any "lie" scale to check if the items were being responded to truthfully or merely in a socially acceptable manner. This is a difficulty that is typically faced when developing any self-report instrument assessing attitudinal aspects.

The final research method has attempted to triangulate these findings by including patient exit interviews as well as observational data on communication with patients. The data for this is not available right now.

Since the inventory is to be used in a two-group randomized control study, it might have been methodologically more robust to develop an alternative version of the scale to be used in the post-test phase of the study as well. However, time and cost constraints precluded this possibility.

Conclusion

The paper reports the development of an attitudinal inventory for use with staff of the public health care system in Mumbai city. While the inventory has several unique characteristics, there are some shortcomings as well. However, the inventory has demonstrably robust psychometric characteristics.

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