Clinical Practice Guidelines in India: quality appraisal and the use of evidence in their development

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ABSTRACT

Introduction:

Clinical practice guideline (guideline) development methods in India have come under increased scrutiny in the recent decade with a growing interest on the use of evidence in guideline development.

Methods:

Guidelines on the four leading causes of disability adjusted life years in India (ischaemic heart disease, lower respiratory infections, chronic obstructive pulmonary diseases, tuberculosis), published on or after 2010 was searched in electronic databases and by other methods and their quality appraised by using the AGREE-II appraisal tool. In-depth, semi-structured interviews were conducted with 15 individuals involved with the development of the included guidelines and the transcripts were analysed using the framework approach.

Results:

We included eleven guidelines. The median AGREE II domain scores was highest for 'scope and purpose' (81%) and 'clarity of presentation' (76%), and lowest for 'rigour of development' (31%) and ‘editorial independence’ (33%).

Four main themes emerged from the interviews: (1) Guideline development in India is undergoing transition towards adoption of systematic, transparent and evidence based approaches but several barriers in the form of attitudes towards use of evidence, lack of methodological capacity ,inadequate governance structure and funding exist ; (2) Guideline development is an academic activity restricted to elite institutions and this affects panel composition, the consultative process and implementation of guidelines (3) Mixed views on patient involvement in guideline development; (4)Taboo & Poor understanding of issues surrounding conflict of interests

Conclusion:

A multitude of efforts is needed by issuing agencies and the government to ensure development of guidelines in transparent, evidence based and a systematic manner with high quality in India.

Keywords:

practice guideline, guidelines as topic, evidence-based medicine, quality, systematic review, country-level policy making, AGREE II, reporting standards, India, tuberculosis, ischaemic heart disease, pneumonia, COPD

INTRODUCTION

Clinical practice guidelines(guidelines) aim to improve quality of care and health system performance by providing a framework against which clinical practice can be measured(1) . Apart from clinical decision making, they also enable healthcare managers and policy makers to make decisions regarding planning, commissioning, and purchasing of health care services and set priorities (2).

Several factors which plague health systems universally are responsible for the increased importance being accorded to guidelines. The factors include, but are not limited to increased demand on health care services, rising health care costs, increasing medical practice litigation, use of private insurance for healthcare financing and concerns about overuse of health care interventions (2, 3). However, the quality of guidelines has been found to be modest to low. In many cases, the methods used fell short of even basic standards and were not based on research evidence (4-6). Poor quality guidelines are detrimental for making informed decisions as policy makers, funders and healthcare professionals in most cases do not have the necessary knowledge and skills to be able to assess its quality and determine its utility. These issues are international but very little is known about the quality of guidelines and its development in India.

In India, there is a growing realisation that healthcare outcomes can be achieved optimally only if increased access to healthcare services is matched with improved quality of care(7-9). The National Health Policy 2017, has for the first time recognised the need to ensure adherence to standard treatment guidelines in both the public and the private sector(10).. The vast private sector, largely unregulated is known to use non-evidence based unnecessary interventions including expensive diagnostic tests and surgeries to maximise their profits (11-13) has a huge interest in the recommendations being made in guidelines. Under the federal set up of the Indian Constitution, health is a “State Subject” wherein the Government of India (GOI) can only enact model guidelines, and it is up to the state governments to accept, adapt, or discard them or develop their own guidelines. As such a plethora of government organisations and agencies, at the national and state level, as well as professional associations and societies develop guidelines. In 2015 the Indian Council of Medical Research(ICMR) identified evidence informed health policy as its top priority (14). Since 2015, NICE International, UK is also providing technical assistance to the GOI

to help develop evidence-based national standard treatment guidelines (15). Despite the importance of guidelines in India and growing interest in the use of evidence in them, almost nothing is known about the development and quality of Indian guidelines, and how evidence is used in the guideline development process. In this paper, we aim to fill this knowledge gap with respect to Indian guidelines for four conditions with highest disease burden in India.

METHODS

The study consisted of a cross-sectional appraisal of quality of Indian guidelines for four conditions with highest disease burden in India followed by a qualitative component which involved in-depth interviews with those who developed these guidelines

Eligibility Criteria for inclusion of guidelines

In the absence of any formal definition of guideline in India, we defined a guideline as "any formal statement containing recommendations with regards to any aspect of clinical practice (preventive/ diagnostic/therapeutic) and intended for use by health care professionals, recipients or any other stakeholder, irrespective of the label accorded to it by the issuing authority." A document, which focused primarily on providing recommendations on operational, technical or regulatory aspects of healthcare, was not considered as a guideline in this study.

We included guidelines from India published after January 01, 2010 on four conditions with the highest disability adjusted life years(DALY) in India - ischaemic heart disease(IHD), chronic obstructive pulmonary disease (COPD), lower respiratory infections(LRI), and tuberculosis(TB) (16) were eligible for inclusion in the study. Diseases associated with these causes were identified from the online database of the International Classification of Diseases-Tenth Revision (17).

We excluded guidelines which:

1. were developed with an international or continental scope (example South Asian/Asian) even if they were endorsed by an Indian issuing authority.

2. were on multiple conditions, even if they had a component of one of the four causes of our interest.
3. were on *Ayurveda*, *Siddha*, homeopathy, Yoga or any other alternative or complimentary medicine.

Search methods for Identification of guidelines

We searched Pubmed/MEDLINE, CINAHL, Global Health (EBSCO Host) on 8th May 2016. Detailed search strategies are provided in Appendix 1. We also searched websites of relevant agencies and organisations manually between 8th May and 15th May 2016(Appendix 2). We also contacted seven subject experts and searched references of included guidelines.

Selection of Guidelines

We screened titles and/or abstracts of all records retrieved to identify potentially eligible articles and excluded duplicates. Full-texts were obtained in the final phase to make decisions on eligibility.

Appraisal of quality of guidelines

We appraised the quality of guidelines by using the AGREE II instrument (Appraisal of Guidelines Research and Evaluation) (18) .The AGREE II tool consists of 23 items in 6 domains (Scope and purpose, Stakeholder involvement, Rigour of development. Clarity of Presentation, Applicability, Editorial Independence) and two overall assessment domains. The 23 items are each rated on a score from 1(strongly disagree) to 7(strongly agree).

Three appraisers independently appraised the guidelines. One author (SB) acted as the first appraiser for all included guidelines whereas other authors acted as second or third appraisers. As a measure of quality control, all appraisers mandatorily attended the Systematic Reviews: Policy or Practice module in Liverpool School of Tropical Medicine (which has a hands on component on use of AGREE II), and had completed the AGREE II Online Training Module. The AGREE II online training module, includes a *practicum* which allows comparison of acquired rating skills for a given guideline with standard ratings given by international experts (18). The appraisal of the guidelines was done vide an online data management system available in the AGREE TRUST website (http://www.agreetrust.org/) which blinds the appraisers from each other and

automatically calculates the standardised quality scores (18) for each domain. The overall assessment score is not an aggregate of individual domain scores but an independent domain in itself (18).

Qualitative component of study

Any persons involved in the development of guidelines, whose quality was appraised in the first part of the study and whose e-mail address could be acquired publicly constituted the sampling frame for the study, were approached through e-mail. We conducted in-depth semi structured interviews with all persons who expressed willingness to participate, and gave consent for the same. Interviews were conducted by a single author (SB) through Skype or telephone or in a face to face manner in English using an interview topic guide. The topic guide consisted of a few mapping questions, broad open ended questions as well as specific probes. An iterative approach was adopted and additional issues were explored as themes emerged from interviews with previous participants. No fixed order was followed for asking questions and the natural flow of conversation was allowed. If any interview was interrupted due to network connectivity issues, it was resumed from the point it got interrupted.

For Skype or telephonic interviews participants were free to choose a setting they preferred and no data was collected on it. At the researchers end no other person was present. For face-to-face interviews were conducted at the office of the participants which was a secure private room with only the researcher and the participant.

All interviews were transcribed and the transcripts were cross checked with the recording twice to ensure the accuracy. Transcripts were not returned to participants.

The framework analyses approach for analysing the data as it is most suitable and flexible tool for developing themes from semi-structured interviews , particularly for applied health research (19) . Initially coding was done manually but once the final thematic framework was obtained, data management and analyses was done in the software NVIVO 11 (Version: NVivo Pro)

Ethics

The study had been reviewed and approved by the LSTM Ethics committee. Informed consent was taken from all participants.

RESULTS

Search Results

A total of 7439 records were retrieved and after initial screening and removal of duplicates, we identified 20 records for full text retrieval. Full text of two records was not available in public domain. The final version of one of these, which was due public release on August 2016, was made available to the research team while the other guideline was still under development. We finally included 11 guidelines (20-30). The PRISMA flowchart (31) is shown in Figure 1 .

Description of Included Guidelines

Key characteristics of the eleven included guidelines is summarised in Table 1. We found the following guidelines - four on IHD, one on COPD, one on LRI, and five on TB.

Findings on AGREE II Guideline Quality scores

The AGREE II scores for the included guidelines is shown in Table 2. The summary scores across different domains is also demonstrated graphically in Figure 2 .The median domain score was high for the domains of “Scope and Purpose” [81% (57% - 98%)] and clarity of presentation [76% (59% - 92%)] while it was poor for domains of “Stakeholder involvement” [48% (26 % - 78%)], “Applicability” [40%(22% - 75%)] and “Editorial independence” [33% (11% - 92%.)]. This domain score for the “Rigour of Development” had the lowest median scores (31%)among all the domains but scores between guidelines varied. Six of the eleven guidelines has scores less than 31% with the lowest being 15% for the domain of “Rigour of Development”.

The overall assessment scores ranged from 22% to 94% with a median score of 67%. Only four guidelines had overall scores more than 70%. In the Overall Recommendation domain only a single guideline was recommended ‘Yes’ by all three appraisers. One guideline was recommended as ‘No’ by all three appraisers. Others received intermediate ratings.

Description of participants in qualitative component study.

In total, 15 participants with varying levels of seniority, background, prior involvement in guideline development (single or multiple) and prior experience in conducting

systematic review were interviewed. Participant characteristics are summarised in Table 3.

Themes

The themes, and sub-themes which emerged has been summarily illustrated in Table 4. and described in subsequent sections. Participant are presented as numerical codes (P1, P2, P3 etc). PX indicates the non-disclosure of numerical code to prevent deductive disclosure.

Theme 1: Guideline development in India is undergoing transition

This theme outlines the transition in attitudes and practices towards use of evidence in guideline development and how it is influenced by contextual factors, governance, funding and availability of methodological capacity.

Transition in attitudes and practices towards use of evidence

Majority of the participants mentioned that there has been a change in attitudes and practices towards adoption of transparent, evidence based approaches for guideline development since the last few years, although they acknowledged that there was need to do more:

> *"Traditionally the guideline used to be, what I would call like a sermon given in Sunday morning church - it used to be like some kind of preaching. Now more guidelines are evidence based…"- P9*

However, some senior clinicians who have been involved in development of multiple guidelines mentioned that:

> *".. people say we use evidence but it is not in a structured transparent way…they do not give you any section which gives information about how they came up with recommendations, conflicts of interests and stuff."- P6*

Few participants also expressed their preference towards indigenous Indian data over systematic reviews :

"... people are resorting to the evidence that is there in the Cochrane Library…. But then some of the evidence is not from our own country ...that is a problem in formulating guidelines" - P2

Contextual factors are driving transition

Participants recognised that the transition in guideline development in India was driven by need for greater transparency and accountability in health care decision making, increased health literacy and push from other health system actors and utility of evidence in convincing policy makers.

"…people want more answerability, they want to know why you are doing this and also the widespread availability of the so-called free available literature on the internet … That has brought out a necessity in the medical professionals to be more responsive to the needs of patient, and also justify their actions..."- P14

"… he got NICE International to come and teach how to do and develop guidelines in Maternal and Child Health. NICE used to go to various states and it picked up the initiative ..."- P6

"… policy makers are not necessarily medical professionals…They may have their own whims and fancies and they will tell you, you do like this... There it helps to say that this does not have the evidence backing and that evidence is to the contrary."- PX

Better governance is needed to facilitate transition

Many participants acknowledged that guideline development was usually unplanned and ad hoc in nature and they described four types of co-ordination issues: between different government agencies, between government and professional societies, between different professional societies and between those generating evidence and those formulating guidelines.

"… they are starting in a very ad hoc way; they are not making preparations earlier on... They had not thought about the actual process that should be involved in formulating the guideline." – P2

"…we as in Indian Academy of Paediatrics do this and RNTCP advises something else… This was not something that was very good for the children of the country…." PX

"…Department of Health Research is very aware of it but they did not actively participate... I think it reflects the silos in which we operate in this country..." PX

"Because they were not told... Many of these sub-specialty streams were continuing to do whatever they were doing."- P5

"Currently we don't have questions from the government and how the systematic reviews can be used…."- P3

Mixed views on funding as a barrier to facilitate transition

Mixed responses were elicited from participants about funding for guideline development and many participants did not even mention anything about funding. Participants noted that costs during guideline development were restricted to payments for transportation and accommodation of guideline developers and mentioned about the norm of not paying professional fees to panel members.

"I don't think funds is an issue once we decide... Obviously it is not enough but usually we get funding from the professional societies. We obviously do not pay them to be our experts and that is not the usual system. We usually pay for stay and the travel but no professional fee is given. So that way you can say and that is well acceptable in the Indian context."- P12

".... we should develop capacity to develop guidelines and they should be funded by the government." - P2

Although participants were not specifically asked about their opinions about the norm regarding payment of professional fees, none of the participants mentioned it to be a problem. On the contract, one participant, mentioned that:

" … I spend a lot of time of my own and there was no monetary, no payment of any kind...it was a rare opportunity and we should do something and that motivated us and not money… For our own personal development and for our internal clarification... why not we also contribute something of that nature to science and for betterment of evidence."- P9

One participant noted that non-payment of professional fees affected timeliness of guideline development, while some others mentioned lack of dedicated time as a problem although they did not like it with the issue of fees.

"... Not paying them anything and yet doing the work took some time."- P14

"I think certainly for this there was a lack of dedicated time in which to do. I think people there were running around doing other things" – P13

Inadequate methodological capacity to sustain transition

Many participants recognised the need to build more capacity for evidence syntheses and regretted the lack of in-country capacity. Some participants felt that there was enough capacity available.

"Such evidence based guideline development process is pretty much a full time job and as of now the number of people who are attuned to this kind of work is less. …."- P 9

"…it would be better organised if much of the preparatory systematic reviews were done in-country." - PX

Theme 2: Guideline development is an academic activity restricted to elite institutions

This theme looks at how guideline development is considered as an elite academic activity and its impact on the guideline development process.

Academic elitism for selection of guideline panel members

Many participants noted that that panel members were only from elite institutions and mainly from academic background but only a few recognised this as making guideline panels non-representative:

> *"There were so many people from the AIIMS, PGI and SGPGI(name of elite Indian institutions) circles, very little beyond that - I think that part was missed in the guidelines." – PX*

> *".. they don't necessarily have an ear to the ground. They are the specialists and not very community health oriented." -P11*

One participant mentioned that problems during consultative process were caused by individuals who were included only due to their reputation:

> *"… a few people had to be included because of their reputation and with very little interest in the science of extra pulmonary TB. Usually those were the types of people who created hurdles in smooth functioning of the process." -PX*

Participants often justified the non-involvement of particular type of health professionals, state level representatives, or those implementing guidelines on the grounds of them not having published research or their perceived inability to comprehend guideline development process or lack of funds.

> *"…certainly would include people who have published work … But to have people who have no grounding in the process of development of guidelines but they may be located in different parts of the country, but do not have anything to contribute to the process then I don't think that would be very helpful in including them" - P2*

> *"… their (non-clinician health workers) role is mainly during their implementation of program but probably not so much in India in formulation of guidelines..."- P10*

> *"… it could have been improved by the involvement of the persons involved in the primary health care from the start… Unfortunately, we did not have that much funds as well as infrastructure to take those workers on board…"- P15*

Elitism during consultative process for formulating recommendations

Participants noted that elitism was observed in group processes wherein what was being said by panel members from elite institutions was expected to carry more weight than others and problems during the consultative process.

> *"I think it is more about professional ego. [ELITE INSITUTE] is a big centre it is very well established centre and they try to highlight the fact and that kind of made their points stronger..."- P10*

> *"…That was a main problem- tertiary care people making recommendations for district level care and maintaining their viewpoints despite others believing differently."- P7*

Few participants noted that senior members from elite institutions played a key role to resolve disagreements. None of the participants mentioned of any structured system for resolving disagreements.

> *"…when there is a disagreement along a particular point then we go to a particular person, a particular senior person is there and they try to explain and then there is a lot of cross- discussion…"- P12*

Inadequate consideration on putting recommendations into practice

The sub-theme discusses how the academic elitism in guideline development has meant that guidelines did not focus adequately on putting recommendations into practice and there is poor understanding among panel members about issues related to implementation.

> *"… I was told 'this(implementation) was not the primary focus of the guideline formulation'…. The guideline was more academic, its more literature search, weighing evidence, making sure that the bias was not there..."- P11*

> *"There are some people for whom implementation is a matter of choice, a matter of perspective and because this guideline group was a little heavy with academia and some of the recommendations tended to come from their personal positions - what they would do in our institutions. Not keeping in mind that guidelines were meant for the whole country where they might not have so much resource."- P6*

Typically, facilitators and barriers to implementation were not discussed or described in cursory manner during consultative process and participants acknowledged that mechanism to evaluate whether guidelines have been actually being implemented was lacking:

> *"In the end we make a comment about implementation of guidelines that we should ensure that these guidelines remain implemented. We should set up mechanism to see that these guidelines are finally implemented"- P1*

Participants mentioned costs, affordability and availability as factors what were detected were discussed.

> *"to formulate the recommendations from the evidence and they looked at ratio of the benefit versus harm they looked at the other aspect of guidelines and you know the cost, availability and there was a good discussion."- P 3*

One participant however mentioned that:

> *"there was not a lot of consideration about costs... and it did not seem to be high on the agenda…"- P13*

Few participants perceived that differences in terms of state level or health care level diversity was not important for formulating recommendations and they said that:

"… the diversity of the country will have more implications on implementation. The diversity of the country will not have any impact on the guideline recommendations. See TB would be same whether you are in desert or in hills or whether you are in sparsely populated or urbane population. "- P5

"Regional and state level variation, uhh… there would not be variation about how to treat disease…The disease is the same all over India..."- P8

Theme 3: Mixed views on patient involvement in guideline development

All participants, except one, acknowledged that patients were not involved. Opinions however were mixed on the utility of involving patients for guideline development. While some participants regretted that the values and preferences of patients were ignored there were others who talked about difficulties in involving patients in guideline panels due to the lack of organised patient groups in India:

"…they were definitely thinking about their own practice, which is fair enough, but I think they were not really keen to account for taking the patients perspectives of do they care about taking few more months of anti-tubercular drugs." – P4

"Ideally, you know, patient groups and user groups and stuff but we don't have any organised user groups as such... "- P6

There were some participants who expressed opinions that involvement of patients was not necessary in guideline panel and offered several explanations for it - lack of education, poor knowledge about disease, and lack of training and non-involvement of patients being the norm in health sector. They usually tempered the response by a "don't know "or "I am not sure", but a few unequivocal responses were also elicited.

"…Patients yes it would have to but at the moment.... I don't know I really can't answer that question. I am just looking about the kind of patients we deal with. We have a very population, some of them are(PAUSE), can be helpful."- P1

Many participants, some in spite of negative opinions about patient involvement, suggested various ways by which patient values and preferences might be taken into account. On the other hand, few participants mentioned that clinicians were well aware of the patient needs they are considered when formulating guidelines.

".. people who are at interface like social worker they may perhaps contribute but directly patients in part of guideline! … I do not think patient participation will help ..."- P9

"…the problem occurs with illiterate people who are poor, we call them to the meeting but we know what will be their view and they will tell that this drug is not affordable and is not available .. We feel that the group will take care of that but that is an issue and I am also not very sure if they should be included or not knowing their background but maybe somebody's good intention could take care of those issues. " - P12

Theme 4: Taboo & Poor understanding of conflict of interests

The theme looks at the issues about taboo regarding industry-related conflict of interest(COI) and poor understanding of what COI entails and how it should be managed.

Taboo around industry-related conflict of interest

Most participants denied any COI in the guidelines in which they were involved on a few occasions vehemently. Some of them however mentioned that industry influence was common in 'other guidelines' which they knew about.

"Certainly not, none at all, because for one thing there was nobody from the pharmaceutical company was involved... The other thing was none of the members who were members of the panel had any kind of stakes in these companies."- P1.

"… it has happened sometimes occasionally in the past, particularly when newer vaccines. They are pushed a lot by the industry" – P5

One participant, stated that panel members often did not disclose industry involvement but it was not a problem since other panel members were aware of it:

> *" No, No ,No, No. That we don't allow…. It is strictly based on available scientific data … In India we have a people here you must be knowing that people are even indirectly they might be doing something but obviously in front nobody is going to tell that we are associated with this or this company. Although we know it but that factor never comes into play and we go strictly by merit, available literature and all that"- P12*

It is evident that involvement with industry or involving the industry in any guideline process is seen in a negative light and there is a taboo around involving industry-related COI. This 'taboo' leads to compromises in the principle of transparency, forcing non-disclosure by guideline panel members as well as acceptance of this non-disclosure by those managing COI.

One participant, who was involved with the development of a government agency guideline, was suspect of the process being a "part of a larger agenda" and stated:

> *"…I also got the nasty feeling that maybe some of this is controlled, that is just a speculation. For instance, why was GeneXpert being pushed down everybody's throat… if you are talking about how everybody declared everything - the conflict of interest disclosure was documented extremely well in the guideline formulation. If you are talking behind the scenes, one is not completely sure." - PX*

This is probably reflective of the general lack of trust in procedures for managing COI handling procedures wherein non-disclosure of conflict of interest and industry influence is common.

Poor understanding of issues related to conflict of interests

Many participants mentioned that they had to face considerable difficulties in managing COI because people were reluctant to fill disclosure forms. They thought this was due to poor understanding about what COI actually is and people being unaccustomed to declare them:

> *"I don't know, the conflicts of interests were signed and we got them completed as possible. It was relatively new to people to get them understand conflicts of interests…" – P13*

> *"I think it is just something that people were unaccustomed to having to do really"- P7*

Only senior level participants talked about academic COI and mentioned it as a cause of concern. One of them provided an example of how academic COI played a role during guideline development:

> *".. some people do PCR(polymerase chain reaction) and then telling them that yes, that is an in-house test but we can't have that particular test actually get into these guidelines because of the fact that at one place it has not enough evidence to validate it elsewhere... So you know we keep harping on about commercial conflict of interests but I think non-commercial conflicts of interests are strong and can be as harmful. That needs to be managed" – PX*

DISCUSSION

A key strength of the study is its design, wherein guideline quality was appraised along with in-depth interviews of those involved in the development of the same guidelines. This enabled us to understand issues related to guideline development and its quality in a more comprehensive manner compared to other studies in which evaluated only guideline quality without trying to understand the interplay of several issues which affect guideline development.

In our study we found that in general, for the included guidelines scores were low to moderate for the domains of 'stakeholder involvement', 'rigour of development', 'applicability' and 'editorial independence' leading to poor overall quality in most cases. A global systematic review of guideline quality had earlier found low scores in the domains of 'stakeholder involvement', 'editorial independence' and 'applicability' and moderate scores for the 'rigour of development' domain (32) . However most of the

guidelines included in that review was from high income countries and the results are now more than eight years old to enable any meaningful comparison. The results of our study, is in agreement with a 2015 study (33) on the quality of maternity management and family planning guidelines from India which found poor to moderate scores for domains similar to our study.

The qualitative part of the study helps us understand the reasons behind the low to moderate scores for several quality parameters. We found that the key barriers towards transition to development of methodologically rigorous high quality guidelines are poor governance structures and inadequate in-country capacity for evidence search, syntheses and guideline methodology.

Governance for guideline development is a major issue that needs to be addressed in the pluralistic health care system of India wherein health being a 'State Subject' is federated to the state. As such the GOI can only issue guideline and states can voluntary take up its implementation. As such the voluntary uptake of guideline implementation is often guided by political expediency. The question of "whether when health care is a State subject, is it desirable or useful to make a Central law"(10) has recently come into the policy discourse but is yet to be settled. However, the GOI might consider forming a centralised agency to coordinate and endorse guidelines developed by other health system actors as has been done in other countries with multiplicity of actors like Australia(34).

A previous study on the growth of Cochrane in India has found that systematic review authors (indicative of capacity) has been only limited to elite institutes(35). As such the academic elitism noted in the study might be on account of the need to tap into whatever capacity is available in-country apart from attitudinal barriers wherein guideline development is seen as an academic activity. The INDEX TB guideline(28) which received high scores had engaged Cochrane consultants (from India and United Kingdom)for evidence search, appraisal and methodological advice. This might be indicative of 'political will', driven by contextual factors, to support the transition towards methodologically rigorous guidelines in spite of existing barriers but it also points towards the need for more in-country capacity and need for changes in the medical education system.

Interestingly, participants expressed mixed views on funding as a barrier. This is on account of the norm of not paying any professional fees. For guidelines to become more evidence based in the future - systematic reviews will have to be commissioned,

capacity development done and implementation issues considered more formally. To do all this a timely manner substantial funding would be required in the future.

In the study we also found academic elitism at play during selection of panel members, and consultative processes for formulating recommendations. Those interviewed also expressed mixed views on inclusion of patient representatives. These attitudinal factor explains the poor scores in the 'stakeholder involvement' domain due to non-involvement of health care professionals other than doctors, patient representatives as well as non-academic clinicians and clinicians from non-elite institutions. The heavy academic focus in guideline development also leads to inadequate consideration of putting recommendations into practice resulting in poor scores in the 'applicability' domain. .

The lack of formal methods or use of majority voting for formulating recommendations is particularly problematic in the current scenario where the guideline panel composition and the consultative process is heavily biased in favour of the academia in elite institutions making it difficult for all voices to be heard or and ensure fair weightage to everyone's argument (36) . The poor stakeholder involvement in guideline panel further amplifies the issue of elitism during the consultative process. As such change in guideline panel composition to include implementers and key stakeholders also needs to be accompanied by sensitisation of panel members about the issue of 'applicability' or implementation of guidelines. The change in attitudes towards non-clinician's, patients and other stakeholders would need long term changes in the medical education curriculum. The issue of capacity of non-academic clinicians, other health professionals and patients might be realistic but there would always be panel members who would need to be familiarised with the processes and principles of appraising evidence and formulating recommendations. Instead of excluding such individuals or groups, provisions for training and supporting them to enable meaningful participation should be considered and the Government might consider affirmative action to ensure guideline developing agencies consider building their capacity and inclusion in guideline panels. Considering that attitudinal barriers would exist even if there panels are made inclusive there is a need to use more formal process for

formulating recommendations like the Delphi method or nominal group technique to ensure adequate weightage of opinions to all stakeholders.

The low scores on 'editorial independence' is due to taboo and misunderstandings surrounding COI which prevents transparency and discussion about it. Academic conflict of interests has been linked to authorship of original studies, grant funding and clinical revenue streams (example, from performing a diagnostic procedure like PCR as mentioned by a participant in this study) related to recommendations under consideration by the guideline panel(37, 38).In the wider context assessment of the potential influence of COI and their careful management when recommendations are being formulated in recommendations can be assessed is essential to prevent loss of reputations of organisation developing guidelines(37).

The recommendations for policy, practice and research based on the results of the study has been detailed in

Table 5 .

One limitation of the study is that only explored the views and perceptions of guideline developers and not of other groups involved in planning, implementing and using guidelines and are not involved in the guideline development process. Future qualitative studies need to include them. A key threat to the validity of the qualitative component of the study is social desirability bias or Hawthorne effect(39) which can be neutered through prior familiarization (40). However, the application of this strategy was beyond the scope of this study although few participants were known to one author(SB) previously on a professional basis. Participant checking was during the course of interviews but no respondent validation(41) was attempted.

During the course of analyses, adequate attention was given to deviant cases wherein the data did not support or appeared to contradict themes emerging from the rest of the data to improve the credibility of the research(42). Another important factor that was considered during the analyses was the phenomenon of 'mutedness'. Mutedness is the phenomenon wherein the less powerful tends to internalize norms which are supported by more powerful groups (43). This was particularly relevant to the theme of guidelines process being an academic activity restricted to elite institutions and was

observed wherein non-elite and non-academic participants often did not see it is a problem or offered explanations for such an event.

CONCLUSION

Progress towards better quality guidelines which are developed in a transparent, evidence based and a systematic manner in India would require governance, planning and dedicated funding supported by changes in the medical curriculum and capacity building efforts. Issuing agencies need to adopt policies to make panels more representative, search and appraise evidence appropriately, have formal process for formulating recommendations and disclose conflict of interests.

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Table 1 : Characteristics of Included Guidelines

Guideline Reference	Document Label	Type of Guideline (New/ Update)	Type of Issuing/ Endorsing Agency (Government / Professional Society / Other)	Care Level (Primary/ Secondary/ Tertiary/ Multiple)	Scope (narrow, i.e. only screening, diagnosis and/or treatment; broad, i.e. combination of multiple)	Number of Members in Guideline Panel	Funding Source (Government / Non-Profit Organisation / Pharmaceutical)
ISCHAEMIC HEART DISEASE (IHD)							
Banerjee and Kumar, 2011	Guideline	New	Unclear	Multiple	Broad	2	Not mentioned
Bhandari et al., 2012	Guideline	New	Professional Society	Multiple	Broad	19	Not mentioned
Dalal et.al, 2014	Consensus Statement	New	Professional Society	Multiple	Narrow (diagnosis and treatment)	>100	Pharmaceutical

Ahluwalia et al., 2014	Consensus Evidence-based Guidelines	New	Unclear	Tertiary	Narrow (diagnosis and treatment)	5	Not mentioned
CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)							
Gupta et.al, 2013	Guideline	New	Professional Society	Multiple	Broad	56	Non-Profit Organisation
LOWER RESPIRATORY INFECTIONS (LRI)							
Dheeraj et al., 2012	Guideline	New	Professional Society	Multiple	Broad	52	Non-Profit Organisation
TUBERCULOSIS (TB)							
IAP, 2010	Consensus Statement	Update	Professional Society	Multiple	Broad	10	Pharmaceutical

CTBD-MoHFW, 2010	Guideline	Update	Government Agency	Multiple	Broad	Not Clear	Not mentioned
CTBD-MoHFW 2012	Guideline	New	Government Agency	Multiple	Broad	Not Clear	Not mentioned
Ashok et al., 2012	Guideline	Update	Government Agency	Multiple	Broad	6 authors; others not named	None
CTBD-MoHFW, 2016	Guideline	New	Government Agency	Multiple	Broad	>100	Multiple (government; non-profit organisation; international development agency)

Table 2 : AGREE II Scores of included guidelines

Guideline Reference	*Scope and Purpose*	*Stakeholder Involvement*	*Rigour of Development*	*Clarity of Presentation*	*Applicability*	*Editorial Independence*	Overall Assessment Score	**Overall Recommendation** (Guideline recommended for use?)
ISCHEMIC HEART DISEASE								
Banerjee and Kumar, 2011	67%	35%	16%	74%	22%	11%	28%	Reviewer 1: No Reviewer 2: No Reviewer 3: Yes with modifications
Bhandari et al., 2012	69%	52%	65%	65%%	29%	33%	72%	Reviewer 1: Yes, with modifications Reviewer 2: Yes, with modifications Reviewer 3: Yes
Dalal et.al, 2014	76%	48%	25%	74%	32%	33%	50%	Reviewer 1: Yes, with modifications Reviewer 2: Yes, with modifications Reviewer 3: Yes, with modifications

Ahluwalia et al., 2014	87%	41%	60%	89%	54%	11%	67%	Reviewer 1: Yes, with modifications Reviewer 2: Yes Reviewer 3: Yes
CHRONIC OBSTRUCTIVE PULMONARY DISEASE								
Gupta et.al, 2013	81%	52%	58%	91%	32%	44%	72%	Reviewer 1: Yes, with modifications Reviewer 2: Yes Reviewer 3: Yes
LOWER RESPIRATORY INFECTIONS								
Dheeraj et al., 2012	81%	57%	63%	91%	40%	61%	78%	Reviewer 1: Yes, with modifications Reviewer 2: Yes, with modifications Reviewer 3: Yes
TUBERCULOSIS								
IAP, 2010	85%	33%	30%	80%	51%	69%	56%	Reviewer 1: No Reviewer 2: Yes, with modifications Reviewer 3: Yes, with modifications
CTBD-MoHFW 2010	91%	48%	31%	76%	65%	11%	72%	Reviewer 1: Yes, with modifications Reviewer 2: Yes, with modifications Reviewer 3: Yes, with modifications

CTBD-MoHFW, 2012	63%	26%	24%	59%	67%	25%	39%	Reviewer 1: No Reviewer 2: Yes, with modifications Reviewer 3: Yes, with modifications
Ashok et al., 2012	57%	39%	15%	59%	24%	56%	22%	Reviewer 1: No Reviewer 2: No Reviewer 3: No
CTBD-MoHFW 2016	98 %	78%	94%	94%	75%	92%	94%	Reviewer 1: Yes Reviewer 2: Yes Reviewer 3: Yes

Table 3 : Characteristics of participants interviewed

Participant Characteristic	Details
Gender	Male - 10
	Female -5
Seniority Level	Junior - 3
	Middle -4
	Senior -8
Background	Non- Clinician- 1
	Clinician, Generalist- 2
	Clinician- Specialist- 10
	Clinician, Others- 2
Health Sector	Government – 7
	Non-Profit – 7
	Private- 1
Prior experience in conducting systematic Review	Yes - 6
	No - 9
Guideline Involvement	Single- 7
	Multiple- 8

Table 4 : Main Themes & Sub-Themes for the study

Theme 1: Guideline development in India is undergoing transition				
Sub-Theme: Transition in attitudes and practices towards use of evidence	Sub-Theme: Contextual factors are driving transition	Sub-Theme: Better governance is needed to facilitate transition	Sub-Theme: Mixed views on funding as a barrier to facilitate transition	Sub-Theme: Inadequate methodological capacity to sustain transition

Theme 2: Guideline development is an academic activity restricted to elite institutions		
Sub-Theme: Academic elitism for selection of guideline panel members	Sub-Theme: Elitism during consultative process for formulating recommendations	Sub-Theme: Inadequate consideration on putting recommendations into practice
Theme 3: Mixed views on patient involvement in guideline development		
Theme 4: Taboo & Misunderstanding surrounding conflict of interests		
Sub-Theme: Taboo around industry-related conflict of interest	Sub-Theme: Poor understanding of issues related to conflict of interests	

Table 5 : Recommendations for Policy and Practice

1. Development of governance structures, a **planned approach** towards guideline development, and **dedicated funding** for capacity building, commissioning of systematic reviews and payment of professional fees are key issues which need attention from guideline developing organisations. These are essential to ensure accountability, timeliness and methodological rigour in guideline development.
2. There is a need for governance for guideline development and considering the federal nature of Indian health polity and the dominant role of the private sector in India formation of a **centralised agency to coordinate and endorse guidelines developed by other health system actors might be considered**. Such an agency, if set within the ambit of an appropriate

legislative framework can ensure that guidelines meet minimum standards of quality

3. Multidisciplinary guideline panels, with adequate inter-disciplinary balance and involvement of relevant stakeholders ensures 'ownership' and support for implementation and leads to formulation of more relevant recommendations (37, 44). Guideline developing organisations and the GOI should consider changing policies or adopting legislation to ensure adequate representation in guideline panels for:
    - **all categories of health professionals** including those who are not clinicians (nurses, pharmacists, community health workers, physiotherapists, public health managers, policy makers etc.) from all levels of health care and from all sectors
    - **non-academic clinicians and clinicians from non-elite institutions**
    - individuals with **technical skills** for information retrieval, evidence syntheses, health economics, project management and editing.
    - **patient representatives**

    There would always be panel members who would need to be familiarised with the processes and principles of appraising evidence and formulating recommendations. Instead of excluding such individuals or groups, **provisions for training and supporting them to enable meaningful participation should be considered**.
4. Considering the negative perceptions and difficulties in involving patients in guideline panels using **other approaches to incorporate patient values and preferences** such as indirect input in the form of written testimonials or video tapes, and public consultation before finalisation of guidelines (45) might be considered **as an interim measure**.
5. In order to ensure fair weightage of opinions of all stakeholders it is essential to:
    - Use a **formal process for formulating recommendations like the Delphi method or nominal group technique** (46) Voting as a method is inappropriate in the current context where elite academic institutions are in majority.
    - Having **group leaders or moderators who are acceptable by all stakeholders** and is adept at managing group

processes rather than the most senior person or from an elite institution.

6. **Disclosure of financial and academic COI should be a prerequisite** to guideline panel membership before the process starts and this should be strictly enforced. Non-disclosure when known should be dealt with appropriately.

7. Long term transition and acceptability of transparent, evidence based approaches and multidisciplinary panels for guideline development might need support through **changes in medical curriculum** at the undergraduate and post-graduation level to include concepts of evidence based medicine, conflict of interest and patient centred care. This will ensure better understanding and changes in attitudes and over time decrease the need for training as a part of guideline development process too.

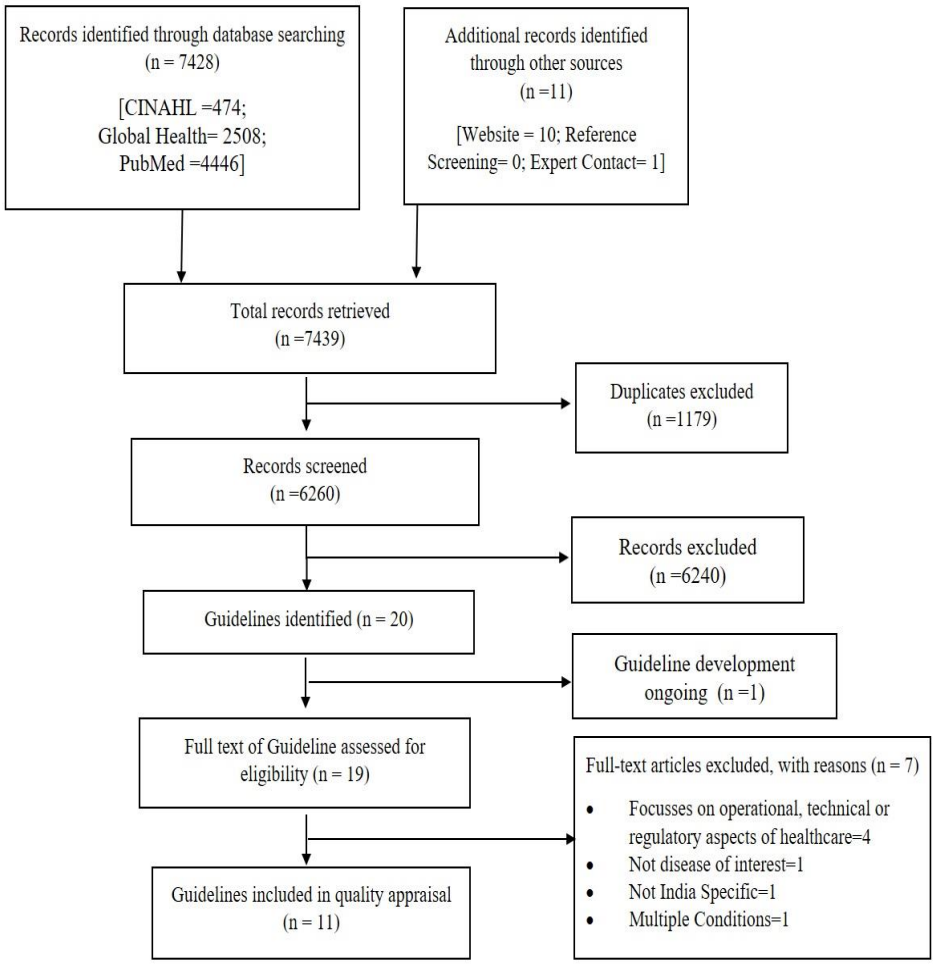

Figure 1 : PRISMA Flow Diagram showing selection of guidelines included in the study

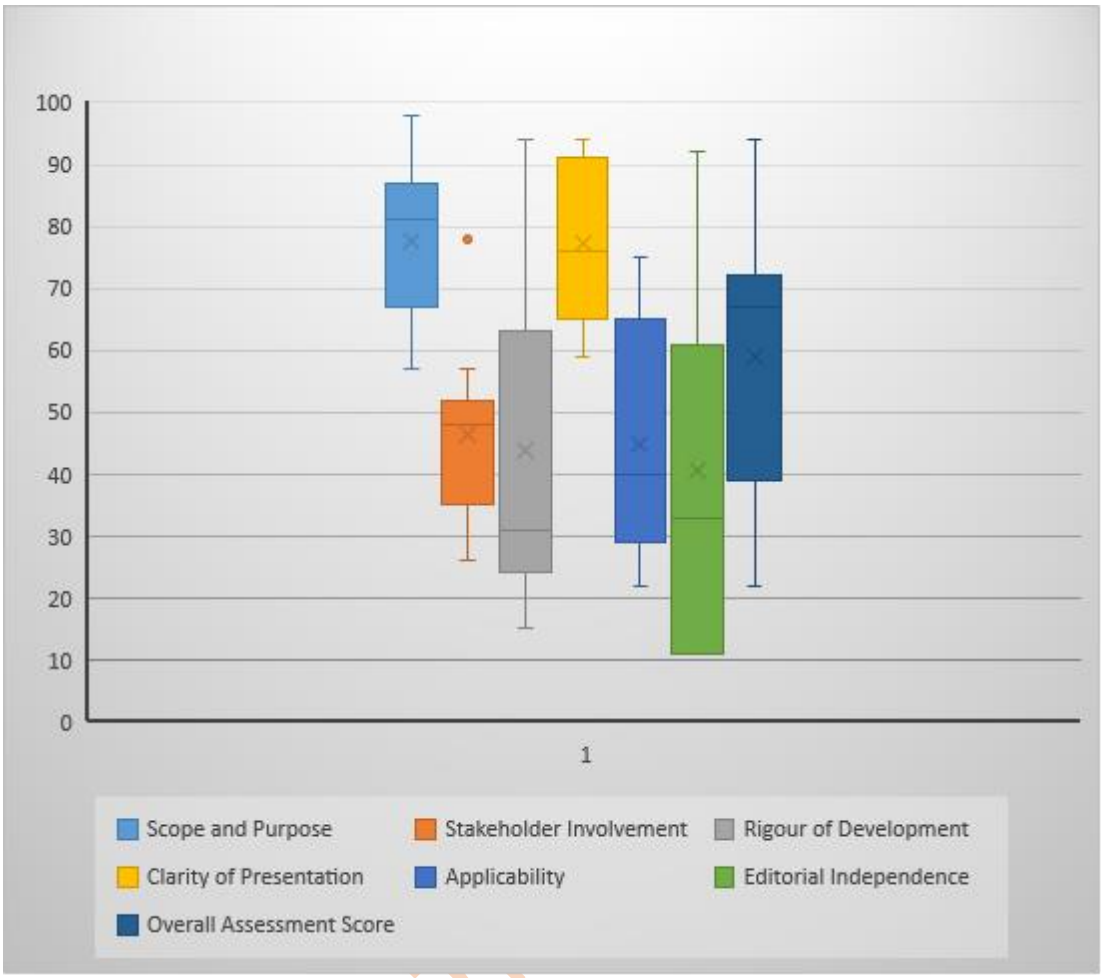

Figure 2: Box & Whisker Plot showing AGREE II domain scores of Indian guidelines on IHD, LRI, COPD, TB