Author's response to reviews

Title: Health Research Profile to assess the capacity of low and middle income countries for equity-oriented research

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Version: 3 Date: 11 January 2006

Author's response to reviews: see over
HRP comments

Reviewer's report
Health Equity Research Gauge to assess the capacity of low and middle income countries for equity-oriented research: international survey
Version: 1 Date: 29 November 2005
Reviewer: Ole Norheim
Reviewer's report:
General
This paper is a report from a multi-disciplinary (and multi-cultural) team collecting data on various aspects of equity oriented health research in 12 countries in Asia, Latin America, Africa and central and Eastern Europe.
The method used is the so-called Health Equity Research Gauge (HRP), which is a questionnaire (or check list) with items related to five dimensions of relevance to equity oriented research. The team developed the check-list by a modified Delphi technique, and collaborated with key-informants in each country to access the information needed.
The main results are that few of the countries examined have clear national research priorities and that there is "limited use of research to solve operational problems, address country priorities (particularly equity issues) or influence policy." The study also shows variation in the degree of funding of equity related research, the capacity for knowledge production, completion and publication of research and impact.
The strengths of the paper are its comparative perspective and the way it collects information from various sources and put it together under a consistent analytical framework.
The study addresses a highly relevant and important issue and deserves to be published if some further revisions are made. The recommendations seem to be well founded.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The main weakness of the paper is related to the choice of methodology. Although it is called a survey (in the title), the identification of key informants is more typical for qualitative interview studies. The number of informants is not provided, and we are not provided with enough background information to assess whether the informants are representative or not. In short, the study is presented as a survey or questionnaire study, but uses methodological techniques from qualitative studies (without being systematic and explicit on the choices made). The paper can be improved if the HRP is presented as a qualitative instrument used for assessing a number of topics of relevance for equity related research. The methodological section and discussion should be revised accordingly.

Author's Response: This is not a purely quantitative study. It is semi quantitative and is based on existing data, the quality of which depends on the quality of information system in the countries. We cannot expect the standard of information system in developing countries to be high. However, when we apply a common analytical framework, we can see some trends related to HDI, which showed some construct validity. Therefore, we can say that the results have generated hypotheses for further testing. The strength of the study is a common analytical framework, construct validity, and possibility for future studies to address weaknesses of this study. The main weakness is the use of existing data which may be of varying quality. This weakness has been partially overcome by the choice of key informants, most of whom were within the mainstreams of health research systems, either from the academic or the government sides. This means that their perception or reflection may render some meaning to the numbers as well as may help interpret when numbers are missing or the quality not ideal. Of course, the choice of informants may be biased, but the fact that we chose
three countries in a region with different HDI levels and then compared across regions
countries with similar HDI and the results showed some consistent trends given the consistent
analytical framework we used means that the conceptual framework can be useful.

Revision to methods and discussion:
We added a section entitled study design at the start of the methods to reflect the combined
qualitative and quantitative methods.

“Study design:
We developed a mixed methods study, combing both quantitative and qualitative data
collection methods. Key informants gathered existing data from countries using a common
conceptual framework (see below). Because the quantitative data from developing countries
is of variable and low quality, we relied on the key informants to identify relevant data sources
in each country and to reflect on the meaning of the data collected. These key informants were
selected from within the mainstreams of health research systems, either from the academic or
the government sides.

We choose three countries in each of four regions with different HDI levels and then compared
trends across HDI levels within each region. This study provides a basis for generating
hypotheses on the relationship of HDI to national health research systems.”

Author’s response In discussion section, we added at the start of the discussion a paragraph
clarifying the methods and findings.

‘This study used a common conceptual framework to collect data on national health research
systems, using a combined quantitative and qualitative approach that used existing data from
countries, supplemented by interpretation by key informants from within the health research
systems in countries. Our findings of consistent trends across HDI in the different regions for
a range of indicators provide the basis for construct validity that our model can be used to
generate hypotheses and design future studies to address weaknesses of using existing
datasets.”

Moreover, semi-accurate data on total amount spent on health research are presented in table 3.
Presumable, these figures are provided by informants, but no sources are listed. The same point
applies for item 9, table 2.

Author’s response As described above, the data are limited by relying on existing datasets,
supplemented by interpretation of data and selection of proxies by key informants from within
the health research systems. We describe the source of all data as (page 6):

“The regional coordinator and country collaborator obtained information on the 32 HRP
indicators from both documents and discussions with stakeholders in each country. Where the
direct indicators were not available, proxy indicators were selected which the advisory working
group felt best represented the situation.

Moreover, it is concluded that: “In countries with a higher HDI, there was evidence of greater
capacity (human resources, research institutions, publications, financial resources) but no greater
link to equity-focused research, alignment of research with health priorities or use of research for
policy-making. This raises a question about the relationship between national health research
investment and human development indicators.” The result is presented as if statistical tests have
been performed, while this is not the case. Due qualifications should therefore be taken.

**Author’s response We added qualification:**

“Although we conducted no formal statistical tests for trend, the consistent trend across HDI provides some construct validity hence the results provide the basis for generating hypotheses about the relationship between human development indicators and national health research investment.

The same point applies for table 6 on the relation between HDI and research publications. The text states that “We found a trend in number of publications by country, according to the HDI, using an electronic search in Medline in 1999”. This does not hold for Africa, and should have been discussed.

**Author’s response We added discussion of results in Africa:**

“This trend did not apply to Africa, likely due to the strong research infrastructure at Makerere University in Uganda which had close ties with the University College of London in the UK. Furthermore, the higher HDI countries chosen in Africa are small (Mauritius 1.2 million and Namibia 2 million in 2005). “

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

P 1: Paragraph starting with “The project was funded by COHRED…” Remove (was stated in first sentence)

**Author’s response We removed this paragraph.**

P 6: First paragraph “Feasibility of data collection”. Should be revised and moved after presentation of main results.

**Author’s response We feel it is important to described feasibility of data collection before the results- however, agree with the third reviewer’s suggestion to move this section to the “methods” section and have done so.

P 13: Paragraph starting with “The World Health Organization…” is outdated and should be removed.

**Author’s response removed**

P 14: Paragraph starting with: “Our data suggest…..” can be removed (does not add any value)

**Author’s response removed**

P 14: Sentence starting with “In conclusion, we recommend….capacity for research…” This sentence (and the paper as well) does not properly distinguish between research in general and equity related research. This makes the information provided difficult to interpret.
Author’s response We have re-read this paragraph and the article, and disagree regarding the need to distinguish between research in general and equity-related research. When we discuss equity-related research, we mention so specifically, by describing the focus on determinants such as socioeconomic status (e.g. “there is indeed research on health determinants such as socioeconomic status, education and gender and its relationship to health and well being” or by describing “equity-focus”).

- The reference list includes some codes that should be removed
  Author’s response done

Discretionary Revisions (which the author can choose to ignore)
Accept after minor essential revision

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published
Statistical review: No
Declaration of competing interests:
I declare that I have no competing interests.

Reviewer’s report
Health Equity Research Gauge to assess the capacity of low and middle income countries for equity-oriented research: international survey
Version: 1 Date: 28 October 2005
Reviewer: Barbara Starfield
Reviewer’s report:
General
This paper lacks the characteristics necessary to hold reader interest. Without any evidence that the method has any validity or reliability, or that all of this data (even if collected well) has any relationship to equity in health, it is difficult to justify the time it takes to wade through all the reported percentages.

Author’s response We have added a paragraph in the methods on study design (as above) and in the discussion (as above) to describe the strengths of this study based on a common conceptual framework with evidence of construct validity by the consistently observed trends across HDI in 4 regions, and supplemented by key informants’ interpretation of the data. We chose to submit to BMC Public Health partially because you allow longer articles. We feel it is very important to provide sufficient details about the methods, experience collecting the data and interpretation of the results to allow other to use this data as a basis for hypothesis generation and future studies.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The paper needs to start with a definition of ‘research’ (how do we know that all respondents are responding to the same concept of ‘research’?),

Author’s response We define research on page 4: “In this conceptual framework, the health research system is characterized by five linked components: health research priorities, resources (amount spent on research), production (capacity issues), packaging, and impact (evidence of research affecting policy development or programs and interventions). “
a justification for the questions that are asked (i.e. the validity of the questions, the reliability of the data, and the nature of respondents and their comparability in understanding the concepts that are addressed.

**Author’s response**: We define the selection process for the questions on page 5- indicators were selected from previously used indicators (hence they already had some experience in collecting them and their validity, feasibility and quality) based on feasibility of collecting them, validity, quality relevance to equity and comprehensiveness for measuring research as defined above. These constructs of the indicators were assessed by country coordinators who were highly experienced academics familiar with the health research systems in country (CSA, DO, FM, PM). We have revised to clarify that these indicators had already been used in other studies (bold sections have been revised):

“At this meeting, we reviewed existing indicators for these 14 questions that had been used for other measurement projects such as the Global Equity Gauge Alliance, the UNDP Human Development Report, the ENHR indicators, OECD indicators and the ASEAN Multi-country study on resource flows for health research and development.

We used a mini-Delphi technique to rank-order these existing indicators, using two steps. First, each member of the project team rank-ordered the indicators independently according to their quality, validity, comprehensiveness, feasibility and relevance to equity. Second, the results of this rank-ordering were collated, re-circulated and re-ranked. The project team reached consensus on the final list of 32 indicators for each of the components of the Health Research Profile (Figure 2).

Research is generally considered to be an endeavor that uses systematically collected data to contribute to knowledge and understanding. What is described in this paper is simply data collection, not knowledge generation.

**Author’s response** We have added a paragraph on the demonstrated construct validity of this conceptual framework due to the observed common trend across HDI in 4 regions, accepting the weakness of using existing datasets, and demonstrating the rationale for using key informants to supplement and interpret the meaning of data collected in countries.

We believe these data generate knowledge about the lack of equity-focused research and the weakness of national health research systems to address priority problems in developing countries. We have demonstrated the construct validity of our framework by comparing results across countries with similar HDI in 4 regions. Furthermore, these data form the basis for generating hypotheses on how to strengthen national health research systems such as increased internal investment in health research, setting national priorities, increasing attention to the know-do gap and increasing attention to how equity issues affect access to health care.

Technical issues:
The definition of equity is given as a ‘fair opportunity...’ What is a ‘fair opportunity’? How is this definition related to this data collection effort? (Perhaps a definition that lends itself to measurement is given by the international Society for Equity in Health (see www.iseqh.org website)

**Authors response**: We have revised this paragraph to accept the limitations of the normative judgment of fairness and illustrate what is meant by health equity:

“Equity in health implies that ideally everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that no one should be disadvantaged from achieving
"this potential, if it can be avoided" [4]. This definition requires a normative judgment of fairness and is therefore difficult to measure. A more recent definition of health equity that avoids this normative judgment is: “Health disparities/inequalities are potentially avoidable differences in health (or in health risks that policy can influence) between groups of people who are more and less advantaged socially; these differences systematically place socially disadvantaged groups at further disadvantage on health” [Braveman 2006] For example, child mortality is 2-5 times higher in the poorest compared to the richest in developing countries and has been described a health inequity that can and should be addressed by improved health systems [Moser 2002].

Page 5 states that a Delphi process was used to rank order ‘indicators’. What is the relationship of the 32 'indicators' to the 'broad questions', i.e. what are the 'broad questions'?

Authors response: We have added these 14 questions as an appendix. The questions were used as a starting point for selecting indicators from other ongoing studies.

If the 32 'indicators' are the 32 questions in Figure 1, then they are not really 'indicators' because there are no criteria for their interpretation.

Authors’ response: the indicators are interpreted as indicating the country-level health research priorities, resources (amount spent on research), production (capacity issues), packaging, and impact (evidence of research affecting policy development or programs and interventions).

Page 5 bottom: what is a 'direct' indicator? What is an example of a 'proxy indicator'? How can an 'indicator' be 'answered' (page 6)?

Authors’ response: Our team hypothesized a priori that we might need to use proxy indicators, but this was not in fact needed. We have deleted this sentence from the manuscript to avoid confusion.

Page 6 top mentions feasibility but nothing before this mentions the issue of 'feasibility'.

Authors’ response: Feasibility is described 3 times in the paper- first, feasibility was one of the criteria used to select indicators (page 5); second, feasibility was assessed in each country by key informants experienced with the country health research systems and third, we have a section on feasibility describing the ability to collect data on the indicators in each country (page 10).

Page 11 states that only 7 countries of the 12 stated that inequalities (inequities?) were a priority. If this is the case, how can the 5 countries answer any of the other questions?

Authors’ response: most indicators do not relate specifically to equity, but are used as an indication of the 5 components of the HRP framework: health research priorities, resources, production, packaging and impact. For example, a country that does not prioritize equity can still answer questions about the number of research institutes, number of researchers, funding for different types of health research.

The first sentence of the Conclusions is that the efforts of COHRED have 'succeeded'. What is the evidence of this? (There appears to be somewhat of a conflict of interest, as one of the co-authors is a director of COHRED, which makes it all the more important to provide evidence for the statement.)
Author’s response: We have added:
“….for example, by the Mexico Ministerial Statement on health research”

Page 14 (second paragraph of Conclusions). Is it bad or good that ‘the research agendas of some countries may be driven by institutions created by COHRED (and other similar external agencies’? WHY?

Authors’ response: We do not feel the need to revise this statement. The introduction provides a background to the hypothesis that essential national health research driven from within countries rather than external agencies is a key development strategy to ensuring research is conducted on priority problems in country and that there is a focus on equity in developing countries.

The Acknowledgement section contains the names of some of the co-authors, which seems strange as just being a co-author is acknowledgement of involvement.

Author’s response - we have removed authors from the acknowledgments

The references to the reports are useless without indicating how they can be accessed (website?) by readers.

Authors response: We have added the urls for reports

The Title is confusing, since many readers will know that "Equity Gauges' is a very specific organizational structure. Why not simply indicate that this is a paper about Efforts to Collect Information Relevant to Equity?

Authors response: We agree this may be confusing, we have changed the title to:

Health Research Profile to assess the capacity of low and middle income countries for equity-oriented research

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
ENHR should first be introduced in conjunction with the phrase Essential National Health Research (page 3)

Authors response: ENHR is introduced at the first instance of Essential National Health Research on page 2: “The notion that Essential National Health Research (ENHR) is a key strategy for equity in development within and between countries is being revisited under the call for National Health Research Systems [1].” We have left the full version on page 3 since it is part of a direct quotation

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Discretionary Revisions (which the author can choose to ignore)
Reject because scientifically unsound
What next?: d
Level of interest: An article of limited interest
Quality of written English: Acceptable
Statistical review: No
Declaration of competing interests:
I declare that I have no competing interests

Reviewer's report
Health Equity Research Gauge to assess the capacity of low and middle income countries for equity-oriented research: international survey

Title: Health Research Profile to assess the capacity of low and middle income countries for equity-oriented research

Version: 1 Date: 5 November 2005
Reviewer: Carel IJsselmuiden

Reviewer's report:
General

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
Health Equity Research Gauge to assess the capacity of low and middle income countries for equity-oriented research: international survey.
Tugwell P§1, Sitthi-Amorn C2, Hatcher-Roberts J3, Neufeld V4, Makara P5, Munoz F6, Czerny P7, Robinson V8, Nuyens Y9, Okello D10.

When assessing the work, please consider the following points:
1. Is the question posed by the authors new and well defined?
2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
3. Are the data sound and well controlled?
4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
5. Are the discussion and conclusions well balanced and adequately supported by the data?
6. Do the title and abstract accurately convey what has been found?
7. Is the writing acceptable?

Please make your review as constructive and detailed as possible in your comments so that authors have the opportunity to overcome any serious deficiencies that you find and please also divide your comments into the following categories:

• Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
• Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
• Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

Overall comments:
1) The topic is of interest and has been insufficiently studied. The experiences reflected in the paper are largely of an anecdotal nature, as the ‘methodology’ appears to be a conglomeration of ‘ad hoc mechanisms’ of interviews, observation, and document review, none of which are documented or standardized or referenced to any credible degree.
Because of their ‘rarity’ value of the observations, they are probably worth publishing, under the proviso that it is clearly labelled as an “reflection on the relevance of health research systems in 12 countries to measuring equity in health: subjective (or ‘preliminary’) notes”.

–Authors response: We agree, we have changed the title to:

Health Research Profile to assess the capacity of low and middle income countries for equity-oriented research
2) The major problems with this paper as a study concern i) the confused purpose of the study, and ii) the methodology, or rather, the absence of any systematic description of it.

- **Confused purpose:** is the study meant to develop a new method of measuring equity relevance of national health research systems (Page 3: “to develop and test a health research profile (HRP) consisting of 32 indicators of the strength of national health research systems to improve population health and health equity.”) or is it to use this method in a set of countries (Page 3 “to assess whether countries had accepted the importance of research priority setting at the national level and whether there was coherence of research responses to major health problems with special attention to disadvantaged groups. A secondary aim was to assess the relationship between human development and national health research investment”)?

This paper seems to want to do both, and, as a consequence, does neither: it does not develop a convincing argument why the indicators chosen are the best ones, or better/similar to those proposed by WHO, nor does it succeed in applying these meaningfully because of problems with the methodology (see below, under P4 and P5).

**Authors response:** We feel that diversity of methods can be enriching, comparison of similarities and differences in findings with the WHO indicators and the HRP indicators may lead to hypotheses regarding how data are collected and defined. For example, we use a combination of academics and government officials while the WHO methods use government officers to collect the data. This has potential implication on validity and generalizability since health systems consist of viewpoints from the government as well as non-government. Because of this, the HRP methods can add value to the WHO methods.

We have added on page 12:

“For example, we use a combination of academics and government officials while the WHO methods use government officers to collect the data. This has potential implication on validity and generalizability since health systems consist of viewpoints from the government as well as non-government. Because of this, the HRP methods can add value to the WHO methods.”

Specific comments:

**P2 (Abstract)**

“The Commission on Health Research report concluded that “for the most …” should be changed to:

“The Commission on Health Research for Development …”

**Authors response** : Done

**P3**

- “The 1990 Commission on Health Research Report stated that …” should change to: “Commission on Health Research for Development …”

**Authors response** : Done

**P4 and P5**

Methodology. This section describes how the ‘methodology’ was developed. Overall, the approach is unstandardized and subjective.
Authors response: We have added further description of how and why key informants were selected to supplement the quantitative data from countries (described above). This combined quantitative and qualitative method was necessary because of poor quality data in developing countries.

“Study design: We developed a mixed methods study, combing both quantitative and qualitative data collection methods. Key informants gathered existing data from countries using a common conceptual framework (see below). Because the quantitative data from developing countries is of variable and low quality, we relied on the key informants to reflect on the meaning of the data collected. These key informants were selected from within the mainstreams of health research systems, either from the academic or the government sides.

We choose three countries in each of four regions with different HDI levels and then compared trends across HDI levels within each region. This study provides a basis for generating hypotheses on the relationship of HDI to national health research systems.”

In discussion section, we added at the start of the discussion a paragraph clarifying the methods and findings.

‘This study used a common conceptual framework to collect data on national health research systems, using a combined quantitative and qualitative approach that used existing data from countries, supplemented by interpretation by key informants from within the health research systems in countries. Our findings of consistent trends across HDI in the different regions for a range of indicators provide the basis for construct validity that our model can be used to generate hypotheses and design future studies to address weaknesses of using existing datasets.”

• For example, what is a ‘mini-Delphi technique’: does it mean that there are few people participating, or that it only has 2 rounds, or that the anonymity of the respondents was compromised so that one arrives at a consensus?

Authors response: the indicators were brainstormed at our first face-to-face project meeting in Geneva (Oct 21-22 1999 - minutes are attached) using a "mini-Delphi" process (we have added 2 references below). A panel of experts (HRP team members) first identified the high-level issues to be addressed in the HRP and the criteria/principles for selection of indicators. Then the Delphi technique was applied as follows:

Step 1. The experts were asked to nominate any indicators for national health research they thought would be useful to the HRP study - 40 indicators were complied.

Step 2. The participants were asked to select their five most preferred indicators. Clusters of choices for the initial list of indicators were noted (by the facilitator) and consolidated into five indicator groups comprising 31 indicators ... these groups correspond to the five-part HRP framework you illustrate in Fig 2.
We have modified the text to better describe these methods and reference the technique, as follows:

“We then held a face-to-face project meeting in Geneva (Oct 21-22, 1999) to brainstorm indicators using a “mini-Delphi” process [Adler 1996; Portney 2000]. A panel of experts (HRP team members) first identified the high-level issues to be addressed in the HRP and the criteria and principles for selection of indicators. Then the Delphi technique was applied as follows:

Step 1. The experts were asked to nominate any indicators for national health research they thought would be useful to the study - 40 indicators were compiled. Some of these indicators were derived from other initiatives such as the Global Equity Gauge Alliance, the UNDP Human Development Report, the ENHR indicators, OECD indicators and the ASEAN Multi-country study on resource flows for health research and development.

Step 2. The participants were asked to select their five most preferred indicators based on quality, validity, comprehensiveness, feasibility and relevance to equity. Clusters of choices for the initial list of indicators were noted by the facilitator and consolidated into five indicator groups comprising 32 indicators shown in Figure 2.”

References added:


• How were the ‘broad questions’ designed?

Authors response: The 14 questions were designed by the planning committee to initiate thoughts on appropriate indicators and to conduct preliminary feasibility assessment in regions. We did not feel that a separate table/figure was justified to show these 14 questions considering the number of tables already so we have indicated in the text that they are available from the author. We have added the questions below for your information. The text has been modified to:

“The planning committee designed 14 catalytic questions about national health research systems, based on the conceptual framework, to assess whether countries had accepted the importance of priority setting at the national level, and the extent to which their responses consider health equity (available from the corresponding author). The four regional coordinators (CSA, PM, FM and DO) conducted a preliminary assessment of data availability for these questions in their regions (Asia,
Appendix: Catalytic Questions

Health Research Priorities
1. Do you think health research in your country addresses the problems of inequities (inequities in access to services, inequities in health status, and inequities in society social determinants)?

2. Is there a clear statement about national health research policy?
3. What should the national health research effort be in order to improve national health research status?
4. Are there explicit efforts to align health research activities with national health priorities (e.g. health development plans)?
5. Is research used toward solving existing operational problems (versus exploring hypothetical problems)?

Resources
6. Who decides national health research financing and on what basis?
7. What is the quality assurance system for health research?
8. What is the social status of health researchers and influence of certain types of research? (capacity and balance)?

Production
9. Does the present research architecture (structure/research management system) address the problem of fragmentation, duplication of efforts and reduction in gaps?
10. Who and what is driving the health research agenda? (policy makers, researchers, donors, civil society?)
11. What might the mechanism (function / criteria and architecture) for national and international cooperation be to improve national health research status?

Packaging
12. How can the national health research capacity be strengthened and how can collaboration in health knowledge optimization (Pooling, dissemination, synthesis) be created?

Impact
13. Do you think health research provides a basis for policy change?
14. Are there explicit efforts to allocate funds to Research and Development issues that would have the maximum social benefits?

• Why and how were the countries chosen, other than that they represented a level of development? How does this (purposive sampling) influence the results of the study?

Authors response: We describe the 2 criteria for selecting countries on the top of page 6: 1) “to represent low, middle and high scores on the Human Development Index (HDI)” and 2) “In addition, we ensured that the selected countries had a range of experience in implementing the Essential National Health Research Strategy.”

Purposive sampling such as this means that results can be interpreted given the selection criteria. We have added a sentence to the discussion regarding generalizability:

Page 11: This study selected only 12 countries which limits the external generalizability of the study.
• How was data obtained? What does it mean that “the regional coordinator worked with a country collaborator who held consultations with researchers, research managers and representatives of government and non-government organizations to determine the feasibility of obtaining information on the HRP indicators. The regional coordinators and country collaborators were responsible for seeking opinion leaders from all relevant stakeholders in the health research systems from each country.
• “The regional coordinator and country collaborator obtained information on the 32 HRP indicators from both documents and discussions with stakeholders in each country. Where the direct indicators were not available, proxy indicators were selected which the advisory working group felt best represented the situation.” It is unclear what was actually done, and readers wanting to replicate this method are clearly at a loss what should be done.

**Authors response:** We feel we have sufficiently described the rationale for selecting key informants to collect the data. Stakeholders in each country with direct experience with the health research systems are the best people to identify the sources of information in their country. The approach is different in each country because of different health information systems (or lack thereof).
We agree that these methods stray from the “typical” research methods, but we felt that direct in-country experience of stakeholders was essential in identifying the appropriate data sources to answer the HRP indicators.

On page 6, it is mentioned in the results section that:
• “Some of the indicators involved subjective assessments, such as whether research funding is allocated for maximum social benefit and the degree to which research is available “on-time” for policy makers. The project team ensured a common understanding of these subjective assessments with the country representatives as well as the country respondents.”
• Two comments: i) this should be in the ‘methods section’, and ii) it is another example of how the methods section is problematic: how does the reader know in what manner the project team ‘ensured a common understanding’?

**Authors response:**

i) we have moved this section to the end of the methods section, ahead of results.
ii) We held project meetings with regional coordinators (CSA, PM, DO, FM) where we agreed on terminology. The regional coordinators then met or talked with each of the country coordinators regarding the terminology. We did not encounter any questions or problems with understanding of the indicators

In short: the methodology of this study is deficient to the extent that the study is not representative of an indentifiable cohort of countries, is not standardized nor comparable in terms of indicators used (and therefore results obtained) and leaves much to subjective interpretation by the authors and to guessing by the reader. However, as a ‘purposive and subjective’ observation of research system practices in several countries, it could give rise to several working hypotheses and productive areas for research. The paper should be re-written in this way.

**Authors response:** We agree that this study contributes to hypothesis generation and believe we have added sufficient detail regarding the strengths and weakness of the methodological design of this study which included both quantitative and qualitative aspects and have added the following to the discussion:
“Our findings of consistent trends across HDI in the different regions for a range of indicators provide the basis for construct validity that our model can be used to generate hypotheses and design future studies to address weaknesses of using existing datasets.”

P6 (Results)
• “Most indicators (26 out of 32) were answered by at least 8 countries (67%). Despite the lack of data for the other 7 indicators, these indicators provide …”
  o 32 – 26 = 6, not 7 … please change.

  **Authors response:** done

• The ‘results’ need to be re-presented as ‘impressions / observations’ given the problems with the study methodology.

  **Authors response:** We feel we have added enough detail and justification for the blend of quantitative and qualitative methods chosen.

P7 and P8
• the financing of research: nowhere in the methods section has there been any information on how this information was obtained. It is notoriously difficult to obtain solid information on health research investments: are the date on public sector only? Is it health department funding or also science and technology funding? Does it include international funding?

  **Authors response:** We agree that data on health research financing is incomplete at best in most developing countries, and this is reflected in our results section already, eq “The most common problem was that there did not seem to be any centralized data collection, and a high degree of fragmentation in the research system so data was available for some research projects, but not the country as a whole. In some cases, this was related to issues of institutional secrecy. In other cases, high degrees of external funding made national estimates difficult (Indicator 18).”

  As we have explained, key stakeholders and the country-coordinators were responsible for selecting appropriate sources in each country. Furthermore, some of these indicators required subjective assessments (as already described in the paper), and the final answers in the tables and the results are the overall impression of interviews with key stakeholders. We feel the methods sufficiently describe this process.

P12
• “Since 1999, new methods for priority setting have been developed including the recently published Combined Approach Matrix (CAM), which advocates for a transparent, iterative, equity-oriented, multidisciplinary approach involving all relevant stakeholders [18].”
  o The CAM is not a ‘new method’ but a summary of multiple existing methods. It could best be classified as a ‘pragmatic approach’ to health research priority setting rather than a ‘method’.

  **Authors response:** We have revised to:

  “Since 1999, various pragmatic approaches for priority setting have been developed including the Combined Approach Matrix (CAM),…”

• “address health problems. The Macroeconomics Commission on Health ..” change to the “Commission on Macroeconomics and Health”
Authors response: Done

P13
• “the Commission on Health Research and Development in 1990.” Change ‘and’ to ‘on’

Authors response: Changed to “for”

P13 (Conclusions)
As they stand, the conclusions are a collective of thoughts and aspirations that are not based on the findings of the study. It would be better to limit the conclusions to those for which core evidence was found and than to specifically suggest where further (more scientifically rigorous) studies need to be done to help advance our understanding of the field of national health research systems.

Authors’ response: We agree with this comment and have revised the discussion accordingly to base recommendations for research on the findings from the pilot-testing of our framework—see modifications to next point.

CONCLUSION:
1. The paper needs a major re-write: focussing on clarifying methodology where this can be done and stating it in terms of ‘developing a framework’ rather than as a result of a study.

Authors’ response: we agree with this comment and have made the following changes:

Page 3:
This paper describes the results of an international survey, funded by the Council on Health Research for Development (COHRED), conducted in 12 low and middle income countries to develop a framework to assess the strength of national health research systems to improve population health and health equity.

Discussion section:
This study developed a common conceptual framework to collect data on national health research systems, using a combined quantitative and qualitative approach that used existing data from countries, supplemented by interpretation by key informants from within the health research systems in countries. We then pilot-tested this framework in 12 low and middle income countries. Our findings of consistent trends across HDI in the different regions for a range of indicators provide the basis for construct validity that our framework can be used to generate hypotheses and design future studies to address weaknesses of using existing datasets.

In our conceptual framework, unmet health needs and societal values, including equity, are the foundation of the health research system. This framework and the indicators selected argue that a social and political process of all stakeholders is required to effectively address health problems, while maintaining the underlying values of society. We propose that this framework may be used to activate the political process and social process to make the health research system more responsive to the needs of the health system particularly
regarding its underlying value (e.g. equity as the underlying value - which might not be true for all countries).

Weakness of data from developing countries is a limitation of this framework which draws on existing datasets, which we addressed by drawing on the knowledge of key informants experienced in the country health research systems to interpret the data. This study selected only 12 countries which limits the external generalizability of the study.

A strength of our framework is that both the framework and indicators were developed with the full participation of our colleagues in decision-making and execution of activities in the selected regions and countries. Partnership with our colleagues also involved mentoring and capacity building throughout the project inception, development, execution and dissemination.

The World Report on Knowledge for Better Health is developing and testing a set of 43 indicators for the strength of health research systems based on their four part framework of stewardship, financing, resources and producing and using research [13]. The HRP framework includes several comparable indicators, but has a greater focus on measuring the impact and packaging of health research on health policy and population health outcomes. Furthermore, our framework and approach uses both academics and government officials to collect and interpret data from countries. Comparison of results of our framework and the WHO framework may also lead to generation of hypotheses regarding how to measure these indicators and their relevance for priority-setting at the national level.

We identified five research issues based on the results of this project: equity, knowledge management, research priorities, funds and funding, and evaluation.

Equity

The need to clarify the extent of health inequities in health research systems amongst countries is clearly of concern, since only 7 out of 12 countries stated that inequities were targeted as part of health research priorities (Table 2). Furthermore, those countries with the lowest HDI, tended to score the lowest, indicating a between country inequity in the ability of national health research to address local health problems and needs.

We need research on health reform efforts being explored in most countries will result in improved health equity. For example, improvement in average indicators such as childhood mortality may obscure stagnant or worsening gaps between income quintiles [Gwatkin].

Knowledge management

Knowledge management refers to the packaging and implementation of research results so that the research results are available and used to make decisions about health policies and programs. Our results show that research is packaged for scientific publications and research networks. However, the extent to which knowledge is packaged for other audiences is unclear from our data. Furthermore, problems of low quality and ability to complete research limit the ability to disseminate knowledge.

We need to evaluate mechanisms to increase knowledge management and knowledge translation and their impact on health equity. For example, what is the impact on population health and health equity of national research fora described in Thailand and Africa that engage diverse stakeholders including intended beneficiaries, authorities with formal power,
private sectors and civil society [14,15]? How should these mechanisms consider cultural and societal values? For example, members of the International Clinical Epidemiology Network (INCLEN) recently found that physicians are more likely to adopt practices if research has been carried out locally [16].

Research priorities

Research priorities can be used to review resources, knowledge production, knowledge packaging, and measurements of impact to determine whether health research needs have been met. Only 3 out of 12 countries reported national health research priorities, and several countries were not able to answer indicators related to whether health research is meeting needs and whether health research is having an impact. Since 1999, various pragmatic approaches for priority setting have been developed including the Combined Approach Matrix (CAM), which advocates for a transparent, iterative, equity-oriented, multidisciplinary approach involving all relevant stakeholders [18]. Our findings indicate that research is needed on how to facilitate priority setting at the national level in low and middle income countries.

Funds and funding mechanisms

The Commission on Macroeconomics and Health concluded that increased investment in health research by both countries and donors is needed to realize gains in social and economic well-being that are essential to meet the Millennium Development Goals. We found a large degree of foreign external funding, as well as external influence on the health research agenda of many countries.

To more effectively strengthen knowledge systems, we propose that a stable source of funds is required from national governments. Since 2000, there has been considerable progress towards meeting the 1990 Commission goal of 2% of health budgets towards research in low and middle income countries. However, only two countries (Brazil and Cuba) were close to 2%, and in all countries, health spending represents only a small fraction of the GDP of the country.

Research is needed to assess whether external investments in research and capacity strengthening are in line with national priorities and needs. Furthermore, research is needed on successful transitions from dependence on external funding to greater within-country funding and sustainability.

Evaluation

We found poor ability to measure the impact of research on population health and health equity. We identified some barriers to influencing policy including frequent changes in government, communication problems between researchers and decision-makers, small studies that do not generalize to the whole country and the difficulty to strike an appropriate balance between fulfilling the curiosity of researchers and the demand of health systems to promote equity.

More consistent and systematic evaluation is required to assess the impact of national health research systems on population health and health equity. The Health Metrics Network launched in 2004 by the World Health Organization may contribute to improved availability of longitudinal data on equity in health [22]. For example, are regional health research and development fora, such as the Africa Forum [23] and the Asia Health Research Forum [24]
that are based on inclusiveness, country-focus and ownership, succeeding in improving equity in development through research in health?

**Conclusions**

It is evident that the efforts of COHRED and other agencies have succeeded in bringing research on the national health development agendas, for example, by the Mexico Ministerial Statement on health research. However, countries in the lower HDI group are still a long way from being able to translate the research agenda into operational programmes. In particular, nearly all the countries do not have clear national research priorities; and there is limited use of research to solve operational problems, address country priorities (particularly equity issues) or influence policy.

In countries with a higher HDI, there was evidence of greater capacity (human resources, research institutions, publications, financial resources) but no greater link to equity-focused research, alignment of research with health priorities or use of research for policy-making. Although we conducted no formal statistical tests for trend, the consistent trend across HDI provides evidence of construct validity for the common framework. Hence, the results provide the basis for generating hypotheses about the relationship between human development indicators and national health research investment.

Our data indicates that the research agendas in some countries may still be driven by institutions created by COHRED. Without a strong institutional framework and a clear national budget support line, it will be difficult to operationalise the well articulated concepts from the 1990 Commission, and the impact of research will not be easy to define.

There is clearly an indication that research may not yet be fully integrated in the operations of health programmes. This integration of health programmes and research is something countries should strive to do, and to avoid the “project mentality” on matters of research.

Another area of concern is that the capacity for research (human, research institutions, total funding, etc) is very low in nearly all the countries. This obviously has a direct linkage with the production level, which is also low. It is therefore not surprising that there is no link between research done and ability to solve operational problems.

We found that while there is indeed research on health determinants such as socioeconomic status, education and gender and its relationship to health and well being, research on the impact of those determinants on issues such as access to the health care system was very limited. We need to reflect on the fact that equity issues were consistently under-represented in setting research priorities, conducting research projects and ability to influence policy decisions.

In conclusion, we recommend that all countries (and external agencies) should invest more in building a certain minimum level of capacity for research in the countries so we can reap the benefit of the recommendations of the 1990 Commission on Health Research. We need to evaluate the impact of new and ongoing initiatives to bridge the “Know-Do” gap between research and action and improve the translation of research into improved health and health equity [25]. These knowledge translation activities are essential for the achievement of the Millennium Development Goals.
2. The dates and times of when this study was done need to be mentioned: it is ‘old’ data (2000 ?), but some new references used (Mexico Summit, etc) create the impression that it is a recent study.

Authors response: We have added the dates

3. The best use of the work done is, in my opinion, an outline of the core areas where the group of authors think new and better research is needed, and not a ‘call to action’ as this paper is, because the methodology does not support this.

Authors response: We agree with this comment and have revised the discussion and conclusions to reflect data-driven research needs.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
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Discretionary Revisions (which the author can choose to ignore)
Unable to decide on acceptance or rejection until the authors have responded to the What next?: e

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: No

Declaration of competing interests:
I am the current Director of COHRED (the Council on Health Research for Development), which apparently funded this study. I know several of the authors, including my predecessor. I have not been part of this study, nor was aware of it until I was asked to review the study. COHRED can benefit from publication of this study, as it highlights the need for national health research, the field in which we are operating. It can also be harmed by this article, if the study (and thus COHRED’s support of it) is seen as being of very poor quality.