Developing a national set of health equity indicators using a consensus building process

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Abstract

Background

Considerable health disparities documented in Israel between communities, populations and regions, undermine the rights of all citizens to attain the best possible health. The first step towards health equity is to agree on a set of national indicators, reflecting equity in health services provision and health outcomes, and allowing monitoring of the impact of interventions on the reduction of disparities.

We sought to describe the process of reaching a consensus on a defined set of national equity indicators.

Methods

The study was conducted between January 2019 and June 2020, in a multistage design: A) Identifying appropriate disparity measures. B) Agreement on the screening criteria and relative weighting. C) Constructing the consultation framework as an on-line, 3-round Delphi technique.

Results

Thirty measures of disparity, presented to participants, represented the following domains: Health promotion (11 indicators); acute and chronic morbidity (11), life expectancy and mortality (2), health infrastructures and affordability of care (4); education and employment (2). Three scoring rounds took place between February-May 2020. Of the 77 individuals contacted, 75 (97%) expressed willingness to participate, and 55 (73%) completed all three rounds. The leading ten indicators selected were: Diabetes care, childhood obesity, adult obesity, distribution of healthcare personnel, fatal childhood injuries, smoking, infant mortality, inability to afford care, access to mental health services, and distribution of hospital beds. Agreement among raters, measured as intra-class correlation coefficient was 0.75.

Conclusion

The Delphi technique provided a cost-effective, feasible and acceptable method for reaching a consensus with a variety of experts and public representatives. Equity indicators chosen by a broad range of people from different sectors are more likely to be accepted and ultimately implemented. The diverse set of clinical and system indicators should be used to guide governmental decision-making and inter-sectoral strategies, furthering the pursuit of a more equitable healthcare system.

Contributions To The Literature Statement

- Health disparities exist globally in numerous areas.
- Efforts to reduce health disparities between population groups require the collaboration of multiple stakeholders who must prioritize the most important domains for intervention.
- Opinions of both experts and public representatives from a wide range of sectors were collected using a consultation process for the rating of evidence-based equity indicators.
- Consensus was reached on ten selected national indicators, representing preventive and chronic healthcare, and health system factors.
- Active participation of influential stakeholders in the consensus process increases the chances of implementation of the indicators selected in order to reduce gaps and increase health equity.

Background

Equity in the provision of care, regardless of gender, ethnicity, geography, and social or economic status, was defined as one of the six dimensions of quality of care.¹ Health equity implies that everyone should have a fair opportunity to attain their full health potential.² Since the publication of the Commission on Social Determinants of Health (SDH) report in 2008, the equity discourse has emphasized social determinants that comprise the conditions in which people live, work, and age.³ Inequity in access to health care, education, decent work and living conditions, developed neighbourhoods, healthy communities, trust and a sense of belonging, are major contributors to health inequities.^{3–5} Therefore, efforts to reduce health inequities must also take into account the effects of education, income, ethnicity and geography – on health outcomes.

Monitoring health equity is guided by values, including the basic human right to health and non-discrimination.⁴ Reducing health inequalities is a moral duty of governments and healthcare organizations. Governments have set up national health-equity surveillance systems for routine monitoring of health inequity and the social determinants of health, and to evaluate the impact of health-equity policy and interventions. Many countries, like Canada, New Zealand, the US and UK have implemented measurement systems, based on an agreed set of indicators, allowing monitoring of the impact of interventions on the reduction of disparities between disadvantaged groups and the rest of the population.^{6–9}

In Israel, academic and national bodies, such as the Central Bureau of Statistics, have documented disparities related to education, income and ethnicity.⁸ The Ministry of Health (MOH) publishes a yearly report on health disparities, starting in 2010.¹⁰ Considerable disparities have been consistently reported, such as gaps in infant mortality and life expectancy between the Arab and Jewish populations¹¹ and income-related disparities in health services utilization and

health outcomes.¹² Other population groups that have been identified as at-risk for health inequities are ultra-Orthodox Jews, and immigrants from countries of the Former Soviet Union and from Ethiopia.

Israel has a public healthcare system, framed by the National Health Insurance Law that mandates a defined, comprehensive basket of health services to all citizens. Services are provided by four not-for-profit Health Maintenance Organizations (HMOs).¹³ Despite diverse efforts,^{14–17} mainly by the MOH and the four HMOs, considerable health gaps still exist between communities, populations, and regions of the country.¹⁸ These gaps, coupled with a high national level of poverty and widening social disparities,¹⁹ led the MOH to decide on the development of a set of national equity indicators, that will guide its strategy towards more equitable health outcomes and allow regular monitoring of progress in the reduction of disparities.

Social participation in decision making is a key driver for the promotion of health equity.²⁰ In light of this understanding, a Delphi technique was utilized to shape a collaborative, multidisciplinary, and multi-sectoral process for choosing the set of national health equity indicators.

The objective of this study was to describe the process of reaching a consensus among experts and public representatives on a defined set of evidence-based national indicators, aimed to reflect equity in health services provision and health outcomes.

Methods

Study design and setting

The study was commissioned by the MOH, whose senior representative (SA), an equity promotion expert, was one of the researchers. Three other researchers were experts in quality management (RWM, LV), equity promotion (RWM) and health promotion (LV), quality measurement and methodology (PFB).

The Israeli National Institute for Health Policy Research provided both the finance and a steering committee to guide the research. This committee was composed of 10 senior members from the fields of health equity (4 members), economics (1), health policy (2) and quality measurement (3). The multi-stage study took place during January 2019-June 2020 and consisted of the following stages:

Stage A – Identification of potential equity measures

A1. Exploring diverse data sources: Interviews were conducted with stakeholders and data managers such as the directors of national registries at the Israel Centre for Disease Control, to map all available sources of indicators.

A2. Defining the characteristics of a “good” indicator for the measurement of equity: In view of the interviews findings, and based on the relevant literature, potential indicators were searched for, based on the following characteristics: indicators of good quality, according to their clinical meaningfulness and solid scientific basis; reliability (i.e. data is less amenable to manipulation); feasibility of data retrieval (preferably computerized data that is routinely collected, rather than data that requires active collection).²¹ Data on three year time trends was regarded as an optional requirement for the quality of an indicator, allowing to evaluate if the gap widened, narrowed or remained stable over time.

A3. Defining the SDH to guide data analysis. The following determinants were chosen, based on international experience^{6–8,22} and data availability: age, sex, ethnicity, religiosity, immigration, and socioeconomic status (SES). Whenever data on ethnicity, immigration and income/education was unavailable at the individual level, proxy variables were calculated from the socio-demographic characteristics of the residential neighbourhood (N ~ 3000 inhabitants), according to home address. Only indicators with a relative disparity of at least 10% between the at-risk population and others were included.

The product of this first stage was a list of 30 equity indicators, to be presented to the participants in the consensus process. This number of measures was compatible with the literature about on-line Delphi techniques.^{23,24}

Stage B: Agreement on the criteria for equity indicator rating

Based on the literature and on the experience gained in the extant Israeli National Program for Quality Indicators in Community Healthcare,^{21,25} the researchers identified and evaluated diverse criteria that could guide the Delphi participants on the rating of the disparity measures. The steering committee helped define the final four criteria by anonymously voting on the weight of each criterion. The selected criteria were: public health importance - the extent to which inequity in the specific health domain affects public health, and the size of population affected (relative weight 0.37); gap characteristics – the magnitude of the gap, the number of social determinants that shape the gap, trend over time (0.26); potential for change – the ability of actions taken by the healthcare, education or welfare systems, to significantly reduce this gap (0.27); public interest - the importance of the issue and unfairness of the gap, as perceived by the public (0.10).

Stage C: Designing the consultation framework

Participants – A list of 77 potential participants was proposed, aiming to include as diverse a range as possible, in terms of multi-sectorial – persons affiliated with the health, welfare and education sectors; multi-level – including senior and middle management employees, as well as direct service providers from the field; and diversity in terms of age, gender, geographic location, religion and ethnicity. Of the 75 individuals who were willing to participate, 25 were affiliated with academia (research institutes, universities); 23 were involved in healthcare provision (medium level management and healthcare professionals, both from community and hospital settings); 17 were patient and public representatives, including the voluntary (non-governmental) sector and patient organizations; and 10 were affiliated with government ministries (Table 1). Special efforts were made to choose participants from the geographic periphery, and from populations at-risk for disparities such as immigrants, ethnic minorities, carers of patients with chronic illness, etc. Despite these efforts, the geographic

periphery and the Arab ethnic minority were under-represented (13.3% participants from the periphery vs 31% in the population; and 9.3% Arab participants vs 21% of the population). Participation was anonymous. Each participant was recruited by a personal phone call from one of the researchers.

Table 1
Participants' characteristics (n = 75)

	N	%
Gender	49	65.3
Female		
Ethnicity	7	9.3
Arab		
Residence	10	13.3
Geographic periphery		
Major* Domain		
Academia	25	33.3
Ministries	10	14.7
Patient representatives	17	22.7
Healthcare organizations	23	30.7
*Major domain – main place of work or reason for being invited to participate, i.e. a medical director who is also a lecturer at a university is classified as "healthcare organization"		

A 3-round Delphi was chosen to reach a consensus over a set of indicators. Delphi is a widely used and accepted technique for systematically gathering and combining data from a group of respondents within their area of expertise, in order to arrive at an informed consensus on a complex problem.²⁶ The technique is designed to achieve a convergence of opinion on a specific real-world issue, using iterative rounds of grading with controlled feedback reports from the research team. Participants have the option to reconsider their initial grading in light of the group scoring. This technique has been used to reach agreement among experts and/or public representatives on various issues, such as health policy,²⁷ patient reported outcome measures,²⁴ and equity indicators in primary care.²⁸ To allow busy participants from the whole country to participate, an online process was undertaken, facilitated by *Qualtrics survey software*.²⁹ Each disparity indicator was presented in a similar way: title and definition; description of disparities by SDH - gender, age, socioeconomic status, ethnicity, residence in the geographic periphery, and immigration – depending on data availability (Table A1). When presenting the indicators, we used language that could be understood by diverse audiences, including laypersons and non-health professionals. Additional tables and diagrams were available to participants for more detailed data. For each measure, participants were asked to rate all four criteria on a 5-point Likert scale, "1" indicated "not important at all" and "5" indicated "very important". All indicators had to be graded in order for the participant's rating be included in the collective scoring.

Three Delphi rounds took place between February and May 2020, with intervals of 2 weeks between the first and second rounds and 8 weeks between the second and the final (third) rounds. The latter was postponed due to the COVID-19 pandemic, which caused increased burden on healthcare staff and management and timetable constraints among most of the participants.

In the first Delphi round, participants were invited to suggest additional indicators that they perceived to be of importance, to be included in the following 2 rounds. At the beginning of the second and third rounds, participants were informed of the scoring results from the previous round. One automated reminder was sent to non-respondents 5–7 days after the beginning of each round, followed by a personal reminder via WhatsApp, by the researcher who recruited the participant.

A graphic description of the process is presented in Fig. 1.

Statistical analysis

Calculation of disparities presented to participants:

Data from diverse sources was translated and presented as relative disparity measures, which express difference between a measure of interest (rate, percentage, mean or some other quantitative measure) and the chosen reference point.³⁰ For illustration see Additional file 1.

Agreement between participants:

Interrater reliability of the total score of each of the measures was quantified using an Intra-class correlation coefficient (ICC) model (2,k), namely two-way random effects, absolute agreement and single rates/measurement. This method was previously used in similar studies.³¹ Based on a 95% confidence interval of the ICC estimate, ICC values less than 0.5 are indicative of poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability, and values greater than 0.90 indicate excellent reliability.³²

Results

Creation of disparity indicators

In-depth interviews with data managers in the preparation phase revealed that data can be collected and pooled from multiple sources to create disparity indicators. An example of these new capabilities is the proxy estimation of sociodemographic characteristics for all patients on dialysis for end-stage kidney disease during 2014–2018. The encrypted ID number of each individual patient was matched with the Internal Affairs Ministry's registry of addresses. Each home address was translated using geo-coding (turning descriptive locational data such as a postal address or a named location into an absolute geographic reference³³) to a specific geographic statistical area, with its unique sociodemographic attributes. Ethnicity, religiosity and SES of the area were allocated to the individual patient.

Indicators by key domain: Thirty disparity indicators were presented to participants at the beginning of the process (presented in Table 2). These indicators represented the following 5 domains: health promotion and disease prevention (12 indicators), acute and chronic morbidity (10), mortality and life expectancy (2), health care resources, accessibility and affordability (4), and education and employment (2). For a full list of indicators and selected relative disparities see Additional file 1.

Table 2
Indicator scoring, by Delphi technique round*

Indicator definition	Score in round 1	Score in round 2	Score in round 3
Cigarette smoking	4.2379		3.79
Physical activity according to guidelines	4.2059	3.59	3.51
Screening for breast cancer	4.1946	3.57	3.66
Screening for colorectal cancer	4.1453	3.48	3.66
Antibiotic prophylaxis for hip fracture surgery	4.1423		
Routine child immunization	4.11	3.46	
First visit at well-baby clinic	4.093		
Post-natal depression	4.0582		3.68
Perceived health status	4.007		
Dental hygiene, children	3.9506	3.88	
Dental hygiene, adults	3.9263		3.64
Prevalence of obesity, adults	3.9025		3.92
Severe physical disability, adults 20+	3.9016		
Diabetes care	3.8384		4.09
Prevalence of obesity, children	3.7974		4.02
Incidence and treatment of stroke	3.7953		3.58
Prevalence of end stage renal disease, requiring dialysis	3.791	3.75	3.47
Stage of diagnosis, lung cancer	3.7871		
Stage of diagnosis, colon cancer	3.7219		
Stage of diagnosis, breast cancer	3.7142		
Infant mortality	3.6164		3.79
Life expectancy	3.5883	3.64	3.34
Fatal childhood injury	3.5		3.89
Suicide	3.5522	3.52	3.38
Waiting time for psychotherapy	3.3757	3.72	3.77
Inability to afford treatment/medication	3.3445		4.02
Distribution of healthcare personnel	3.2788		3.91
Distribution of hospital beds	3.1325	3.82	3.74
Education	3.1024		
Employment	3.0515		
Incidence of violent offences		3.85	3.4
Weight loss among the elderly		3.49	
Loneliness		3.49	
Prevalence and treatment of dementia		3.54	
Burden of private financing for medical treatment		3.52	
*The 10 indicators with the highest scores in the third, final round, are marked in Bold			

Response and Delphi participation rates

Of the 75 people who agreed to participate, 72 (96%) completed the first round. In the second and third rounds, 64 out of 72 (88.9%) and 55 out of 64 (85.9%), respectively, completed the survey. Thus, the overall Delphi response rate – 55 out of 75 people who agreed to participate (73.3%) completed the 3 rounds.

Indicator rating

Fig. 1 describes the indicators within and between the rating rounds. Table 2 presents the overall weighted score of each of the 30 indicators, for each of the 3 Delphi rounds.

The 10 leading indicators at the end of the third round, with the final score (in

parentheses) were: diabetes care (4.09 on a 5-point-scale), childhood obesity (4.02), inability to afford treatment or prescribed medication (4.02), obesity among adults (3.92), distribution of healthcare personnel (3.91), fatal childhood injuries (3.89), cigarette smoking (3.79), infant mortality (3.79), lack of accessibility to mental health services (3.77) and distribution of hospital beds (3.74).

Analysis of the scores allocated to each of the four screening criteria (Table 3), revealed that public health importance was given the highest score across all 30 indicators (average score 4.02) while change potential received the lowest scores (average score 3.32). The character of the gap and public interest received intermediate scores (3.43 and 3.44, respectively).

Table 3
Indicator scoring by screening criteria and weighted final score.

Indicator	Weighted final score	Health importance ¹		Potential for change ²		Gap characteristics ³		Public interest ⁴	
	4.24	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Diabetes care	4.21	4.72	0.51	3.93	0.91	4.04	0.9	3.8	0.88
Fatal childhood injury	4.19	4.59	0.62	3.86	0.98	4.04	0.79	4.15	0.8
Infant mortality	4.14	4.63	0.63	3.61	1.01	4.18	0.84	4.2	0.85
Prevalence of childhood obesity	4.14	4.54	0.65	3.89	0.91	3.92	0.7	3.96	0.86
Cigarette smoking	4.11	4.63	0.61	3.58	0.85	4.06	0.79	4.07	0.88
Incidence and treatment of stroke	4.09	4.59	0.7	3.59	0.91	4.04	0.91	3.92	0.87
Prevalence of obesity, adults	4.06	4.62	0.61	3.52	1.06	3.97	0.84	4.01	0.85
Forgoing treatment/medication	4.01	4.41	0.74	3.75	0.96	3.9	0.89	4	0.99
Post-natal depression	3.95	4.27	0.79	3.73	0.96	4.1	0.87	3.54	0.99
Distribution of healthcare personnel	3.93	4.18	0.89	3.7	1.17	3.8	0.94	4.17	0.9
Child immunization	3.90	4.58	0.66	3.73	1.05	3.21	0.99	3.9	0.97
Dental hygiene, children	3.90	4.14	0.79	3.93	0.94	3.76	0.86	3.32	0.93
Waiting time for psychotherapy	3.83	4.21	0.87	3.79	1.09	3.66	1.07	3.69	1.06
Distribution of hospital beds	3.79	4.11	0.94	3.51	1.21	3.65	0.89	4.21	0.92
Physical activity	3.80	4.38	0.68	3.28	0.98	3.72	0.79	3.24	1.05
Prevalence of end stage renal disease, requiring dialysis	3.79	4.31	0.7	3.28	0.97	3.8	0.85	3.27	0.86
Screening for colon cancer	3.79	4.37	0.76	3.77	0.83	3.17	1.01	3.32	1
Suicide	3.72	4.15	0.85	3.3	0.98	3.76	0.93	3.83	0.98
Life expectancy	3.71	4.28	0.81	2.89	0.97	3.7	0.94	3.96	0.9
Screening for breast cancer	3.61	4.11	0.94	3.79	1.01	3.17	1.03	3.46	1.03
First visit at well baby clinic	3.59	3.85	0.93	3.63	0.89	3.48	1.03	3.07	1.05
Education	3.56	3.65	1.19	3.3	1.23	3.68	1.05	3.9	0.98
Lung cancer -stage of diagnosis,	3.55	4.15	0.83	3.07	1	3.31	0.85	3.31	0.83
Dental hygiene, adults	3.38	3.79	0.89	3.35	1.05	3.69	0.88	2.86	1.08
Breast cancer – stage at diagnosis	3.34	3.96	0.97	3.23	1.18	2.69	0.97	3.39	0.91
Severe physical disability	3.28	3.86	0.97	2.61	1.01	3.51	0.9	2.99	0.97
Antibiotic prophylaxis for hip fracture surgery	3.13	3.67	1.01	3.59	1.15	2.66	1.08	2.6	1.09
Perceived health status	3.10	3.42	1.03	2.55	0.96	3.41	1.07	2.92	1.04
Colorectal cancer - stage of diagnosis	3.05	3.77	1.1	2.83	1.13	2.49	0.98	2.96	0.89
Employment		3.34	1.16	2.63	1.09	3.01	0.93	3.23	1
Average overall score (30 indicators)		4.02		3.32		3.43		3.44	

Agreement between participants' scores

Table 4 presents the degree of agreement across the 3 rounds. Agreement between 55 participants who rated the top ten indicators was 0.75.

Table 4
Degree of agreement among participants across 3 rounds of Delphi process

Delphi round	Overall ICC* (no. indicators)	ICC for the 10 highest rated indicators
Round 1	0.937 (30)	0.825
Round 2	0.795 (15)	0.656
Round 3	0.610 (20)	0.751
ICC = Intra-class correlation coefficient*		

Discussion

This study describes the process of involving a relatively large panel of experts and patient and public representatives, to reach a consensus on a set of national health equity indicators. This set of indicators is expected to serve as the evidence base for the monitoring and reduction of health inequities.

Among the 10 highest rated indicators, six relate to health and behavior, and 4 relate to the healthcare system. Several of the indicators, such as childhood injury or obesity, may be described as intersectoral, since improving equity in these domains requires collaboration between the healthcare and other sectors. Clinical domains were represented by health risk factors (smoking; childhood and adult obesity); clinical outcomes (infant mortality) and perceived health status. System indicators were represented by healthcare resources (distribution of personnel and hospital beds); accessibility (waiting time for psychotherapy) and affordability (inability to afford treatment/medication). In line with the current equity approach that adopts an intersectional perspective,³⁴ these indicators reflect disparities in multiple social determinants of health – gender, ethnicity, religiosity, socio-economic status, education, income and geographic periphery – which often interact with each other, thus amplifying the burden of individual inequalities.³

The level of agreement between participants' scores was good in the first and second rounds and moderate in the final round. When analysing agreement on the 10 selected indicators among the 55 participants who completed the final rating, good (ICC = 0.75) agreement was achieved.³⁰ Given the range of participants' backgrounds, this level of consensus is encouraging for the future implementation of these indicators.³⁵

This process should be evaluated in light of anticipated possible barriers that could interfere with its successful completion: 1) insufficient data to create an appropriate set of potential disparity indicators: some of the indicators were "created" de novo, by combining diverse data sources, as described in the Results section, thus broadening the existing set of indicators that could be presented for rating. 2) complexity of content that might deter participants without a background in health: A prerequisite to effectively achieving a consensus is that all participants have equal opportunity to understand the issue under consideration and participate in a meaningful and fair way.¹⁷ This is especially important in light of the heterogeneity of panel participants, allowing a variety of viewpoints on the issue of health inequity,³⁶ which is caused by multiple factors and requires multidisciplinary solutions. An on-line Delphi technique is especially challenging, as there is no opportunity for further explanations or dialogue, which could have been provided in a face-to-face Delphi format or other methodologies, bringing together experts in a workshop format.³⁷ The presentation of the indicators in a clear and precise manner and request to rate the indicators in an easy-to-answer, closed format facilitated participation.³⁸ The spontaneous feedback from participants and the high response rate can be regarded as an indication of appropriate adaptation of the participation tool to a diverse audience.

Enhancing the response rate is frequently addressed when conducting a Delphi survey.³⁹ The very high response rate in the first two rounds and especially the high response in the last round, which took place during the first peak of the COVID-19 pandemic, may be seen as an indication of high commitment of the participants towards the consensus process. This may be attributed to several factors including personal engagement with the participants in the initial contact and the reminders sent; to the fact that the process was commissioned by the MOH, thus enhancing the perception that the study results would be more likely to be implemented and thus reduce inequities; to invitation of participants based on their expertise in the topics under consideration, which may have contributed to participants' perception of the process as meaningful and their contribution as relevant;⁴⁰ and to the accessibility and flexibility that the on-line consultation allowed.

Analysis of the final scores indicates that participants allocated the lowest scores to the "potential for change" criterion, reflecting their awareness of the challenges of reducing health disparities, such as the need to incorporate social or policy components to interventions directed at individuals.⁴¹ Moreover, the dynamics of the ratings between the rounds show that participants re-considered their own scoring in light of the feedback provided about the group's rating. Most indicators were rated lower in the third round, compared with the first round, irrespective of their relative grade. This might indicate that participants took the rating seriously and were aware of the difficulties implicit in reducing disparities in the domains and indicators presented in the process.

The multi-level, multi-sectoral background of the participants brought diverse "voices" and perspectives to the consensus process, increasing the chance of selecting indicators that are acceptable and applicable to a wide audience. Effective intervention to increase health equity should be multi-sectoral, given the nature of health determinants.⁴² Involvement of stakeholders in the process, such as those charged with reducing health inequities in the four HMOs, might increase the chances of implementing this set of indicators to guide interventions aimed at reducing disparities.³⁵ Moreover, the active involvement of the

regulating body – the MOH – in the research, facilitated collaborations during the preparation phase and also increased the likelihood of translation of the study outputs into measurable disparity reduction targets for the national healthcare system.

This study bears several limitations. A relatively long interval between the second and third rounds, due to the burden imposed on participants during the peak of the COVID-19 outbreak, could have drastically reduced compliance, but in fact compliance remained high. The impact of such a health crisis on participants' perspectives on the issues under consideration is difficult to determine. Despite extensive review of data sources, the 30 disparity indicators presented for selection do not cover all disparities in the health system. Data on health disparities from national registries are usually not up to date, and are often available with two or more years of lag, while other sources may be more up to date. All the data presented in the research were the latest available. Some indicators that were suggested by participants were suitable for inclusion in the selection process, although none were highly rated. Many of the indicators suggested by the participants could not be included as reliable data was not available. Given the number and diversity of the 30 indicators, we believe that the process covered most of the indicators that were available and suitable to enter the process.

Conclusions

The consensus reaching process was evidence-based, and enabled the meaningful collaboration of a diverse audience. The fairness of the process, whereby every participant had an equal voice, contributed to high engagement and compliance throughout the process. Indicators chosen through consensus of a broad range of people from different fields are more likely to be acceptable and ultimately implemented.³⁵

In this case, the Delphi technique provided a cost-effective, easy to use, relatively quick and acceptable method for involving a variety of experts and public representatives.

The process described herein and its lessons might be used by countries and organizations who have not yet set a unified indicator set or those who wish to renew or expand an existing set. This process can be suitable for choosing equity indicators in different settings, whether national or organizational; primary care or secondary care etc.

The research produced a diverse set of indicators, highlighting the most important areas of inequity in both clinical and health system factors, according to a broad range of stakeholders and opinion leaders, including public representatives. This could strengthen accountability to reduce health disparities by promoting inter-sectoral collaboration both at the level of Ministries and in the field. The MOH - who initiated the process - is accountable to adopt the indicator set and use it as a compass for governmental decision making and inter-ministerial strategies. Governmental policies, standards and regulations should reflect these strategies; ongoing monitoring and public reporting of these measures should be coupled with the setting of targets for the reduction of the highlighted disparities.

Policy-makers in other countries can utilize the framework described here to build their own process, taking advantage of its strengths including evidence-based data, participatory nature, and low investment of time and resources. These characteristics make the Delphi technique suitable for the timely updating of an equity indicators set. Indeed, we hope that these steps will produce a "ripple effect", creating additional processes that will gradually expand public and professional involvement in the quest towards a more equitable healthcare system.

Abbreviations

SDH- Social Determinants of Health

MOH- Ministry of Health

HMOs- Health Maintenance Organizations

SES- socioeconomic status

ICC- Intra-class correlation coefficient

Declarations

Ethics approval- The study protocol was approved by the Institutional Ethics Committee (Approval number 10370984).

Consent for publication- Not applicable.

Availability of data and materials- All data generated or analysed during this study are included in this published article.

Competing interests- The authors declare that they have no competing interests.

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Authors' contributions- All authors interpreted the data and edited and approved the final article.

RWM, PFB, SA, LV, GP, MS and OL conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript. AZ, VM, MS and RWM designed the methods section, analyzed the data and reviewed and revised the manuscript. RWM and PFB critically reviewed the manuscript for important intellectual content.

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Figures

Figure 1. Flowchart of the Delphi process for selecting equity indicators

*ICC =Intraclass correlation coefficient

Figure 1

Flowchart of the Delphi process for selecting equity indicators

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