

Measuring Universal Health Coverage to Ensure Continuing Care for Older People: A Scoping Review with Specific Implications for the Iranian Context

Draft prepared on:

1 April 2020

Prepared for the WHO Centre for Health Development (WHO Kobe Centre -WKC) by:

Seyede Sedighe Hosseini Jebeli¹, Aziz Rezapour², Maziar Moradi-Lakeh³

- 1- Department of Health Economics, Iran University of Medical Sciences
- 2- Health Management and Economics Research Centre, Iran University of Medical Sciences
- 3- Department of Community Medicine, Preventive Medicine and Public Health Research Centre, Iran University of Medical Sciences

Corresponding author: Seyede Sedighe Hosseini Jebeli

Responsible WHO Officer: Megumi Rosenberg

Send comments to: Hosseinijebeli.s@iums.ac.ir with Cc: to Megumi Rosenberg at kanom@who.int

Acknowledgements:

This research was supported by the World Health Organization Centre for Health Development (WHO Kobe Centre – WKC: K18022). We would like to express our sincere gratitude to *Dr Megumi Rosenberg*, Technical Officer, *Dr Sarah Louise Barber*, Director of the WKC, and all colleagues at the WKC who supported us both technically and administratively in this project.

We also appreciate the support of *Dr Christoph Hamelmann* and *Mrs Shadrokh Sirous* from WHO Country Office in Iran providing us with their technical input on the report.

We would like to sincerely appreciate the contributions of the following colleagues who participated as panelists in this study:

Dr Salime Goharinezhad, Assistant Professor, Preventive Medicine and Public Health Research Centre, Iran University of Medical Sciences.

Dr Mohammad Mehdi Golmakani, MD, former Head of Sustainable Development Centre, Tehran Municipality.

Dr Vahid Rashedi, Assistant Professor, School of Behavioral Science and Mental Health, Iran University of Medical Sciences.

Mr Mohammadreza Asadi, Head of Psychiatric Patient`s Rehabilitation Centres Department at National Welfare Organization, Iran.

Dr Mohsen Shatti, Assistant Professor, Social Injury Prevention Research Institute, Iran university of Medical Sciences. Head of Older Person`s Care Office, Ministry of Health and Medical Education.

Dr Mahshid Foroughan, Professor, Department of Geriatric Medicine, University of Social Welfare and Rehabilitation Sciences.

Dr Ali Shojaee, MD, MPH, Head of National Centre for Health Insurance Research, Iran Health Insurance Organization.

Dr Maryam Ramezani, PhD, Senior Health Economics Expert, Ministry of Health and Medical Education.

Dr Vahid Alipour, Assistant Professor, Department of Health Economics, Iran University of Medical Sciences.

We acknowledge and appreciate the collaborations of *Dr Shandiz Moslehi*, as a qualitative research expert in this study and *Mr Naser Derakhshani*, who supported us with the literature searches.

Table of contents

EXECUTIVE SUMMARY	5
Background	5
Methods	5
Key findings	6
Conclusions and recommendations	7
BACKGROUND	9
Study Objectives	11
METHODOLOGY	12
Design	12
Eligibility criteria	12
Search strategy and information sources	13
Data Collection and Analysis	13
<i>Selection of studies</i>	13
Data extraction and analysis	14
Expert panel consultation	15
<i>Discussion Guides</i>	15
<i>Participants</i>	15
RESULTS	16
Study retrieval	16
Study characteristics	18
UHC Measuring themes	26
Background measures	27
Quality themes measured	28
Financial/social protection measures	30
Access/coverage themes and indicators	32
Equity measures	33
Results of the panel	35

<i>Background of national ageing laws and regulations in Iran</i>	.....	35
<i>Healthy ageing measures</i>	.....	36
<i>Long-term care in Iran</i>	.....	37
<i>Coverage</i>	.....	49
<i>Quality of care</i>	.....	40
<i>Financing of long-term care</i>	.....	41
<i>Expenditure pattern</i>	.....	41
<i>Financial protection</i>	.....	42
<i>Social protection</i>	.....	42
DISCUSSION	.....	44
Conclusion	.....	49
REFERENCES	.....	50
APPENDIX 1	.....	54
APPENDIX 2	.....	55

List of figures and tables

Figure 1: PRISMA flow diagram	.....	16
Figure 2: Pyramid of LTC for older people in Iran	.....	38
Table 1: Study Characteristics	.....	17
Table 2: UHC Measuring themes	.....	25
Table 3: Background measures	.....	25
Table 4: Quality themes measured	.....	27
Table 5: Financial Protection	.....	29
Table 6: Access and Coverage level	.....	31
Table 7: Equity Measures	.....	32

Executive Summary

Background

Universal health coverage (UHC) is an important element of the global health agenda, as highlighted by the United Nations Sustainable Development Goals (target 3.8), to ensure that all people can obtain necessary health services without experiencing financial hardship. Population ageing is a growing public health concern around the world both in developed and developing countries. Therefore, UHC must be achieved in a world facing both demographic and epidemiological transitions.

Population ageing will dramatically increase the proportion and number of people needing long-term care in countries at all levels of development. Ensuring an appropriate combination of settings for long-term care that includes both formal and informal care is regarded as crucial. Appropriate services for older people with chronic diseases are essential and require the integration and coordination of care across different service providers and between health and social care.

For health systems to respond to ageing and to provide innovative solutions to the care of older persons, the monitoring of UHC progress in the context of ageing is also necessary. The most comprehensive UHC global monitoring framework was published in 2017 by the World Health Organization (WHO) and the World Bank. This framework includes 16 tracer indicators of service coverage, which includes four from each of four categories (reproductive, maternal, newborn, and child health; infectious diseases; non-communicable diseases; and service capacity and access), but do not cover healthy ageing or the health system capacities needed to care for older persons.

Considering the WHO Global strategy and action plan on ageing, which emphasizes the development of sustainable and equitable long-term care systems, the implementation of comprehensive systems for long-term care could accelerate UHC for older persons in low- and middle- income countries (LMICs). To monitor progress towards UHC in the context of ageing, it is necessary to develop suitable monitoring frameworks that include objective measures to assess actions aimed at covering the needs of older people. Based on the knowledge gap that exists on UHC monitoring approaches and frameworks in the context of ageing and considering the necessity of adapting health system responses to meet the needs of ageing populations, this study aims to propose a new framework to measure UHC progress in a way that is more relevant to health systems responding to population ageing.

Methods

Scoping reviews systematically search and synthesize knowledge around specific aims and map key concepts (in the case of this study, measuring UHC in the context of ageing). We followed the Arskey methodology to conduct a scoping review to identify and classify themes and indicators to monitor the

response of health systems to ageing populations with attention to LMICs. To conduct the scoping review, we first identified our research question and developed a search strategy; we then searched five electronic data bases including Scopus, ISI Web of Knowledge, PubMed, Ovid (including Cochrane database of systematic reviews) and ScienceDirect, as well as grey literature in international organizations' websites (e.g., WHO and the World Bank). After screening studies based on their relevancy and eligibility criteria, we summarized the final set of studies based on information gathered through a data-extraction form. Data was charted and presented according to the research objectives. Finally, based on the recommendation of the Arskey methodology, we conducted an expert panel review to discuss the findings and examine the feasibility of the recommended indicators in Iran; we used the experts' opinions to provide better indicators in the context of Iran. For this purpose, we invited academics and policy-makers in Iran, developed discussion guides based on the results of the review and gaps in the literature and conducted two rounds of panel review.

Key findings

Results of the literature review

This review retrieved 18 437 records. After de-duplication and title/abstract screening, 101 full-text articles were retrieved for further appraisal, of which 35 documents were included in the analysis.

The findings showed that there is no specific framework for measuring UHC in the context of ageing. We also found that healthy ageing indicators are not included among the global reference list of 100 core health indicators (plus health-related SDGs) published by WHO, which are measured and monitored worldwide. These findings show how neglected the measurement of healthy ageing is in comparison to other areas like maternal and child care and non-communicable diseases.

The findings of the review are summarized in different sections and include background measures (healthy ageing and UHC composite measures) and UHC targets (quality of care, financial protection, coverage and equity measures). In each section, we identified main themes and classified core indicators under each theme.

Besides the seven background indicators in demography and healthy ageing, there were 25 indicators for quality of older person's care were identified and classified into eight themes and 22 indicators on financial protection classified into three themes including expenditure pattern, financial protection, and social protection. Ten indicators were retrieved that measure coverage and access to long-term care services for older people. Moreover, we identified 3 composite indicators that measure UHC in the whole population and seven cross-cutting equity measures.

Panel review

Through the panel review, the available modes of long-term care for older persons in Iran were identified, and measurement issues on healthy ageing, quality of care, coverage level and financial protection were discussed. After discussing the indicators retrieved from the literature, some were excluded because they were not feasible according to the available health information systems and surveys, and others were excluded because related programs or structures were not available in Iran. For instance, there is no long-term care insurance in Iran, so measuring the population covered by this scheme is not applicable.

Some new indicators were proposed by the panel such that in total four indicators were recommended for healthy ageing, eight indicators for measuring quality of care, five indicators for coverage level, one indicator for defining the expenditure pattern on long-term care, and three and five indicators for financial and social protection, respectively.

Conclusions and recommendations

To summarize, there is no specific framework available to measure UHC in the context of population ageing. Moreover, existing frameworks for monitoring UHC lack specific indicators of care for older people. Unfortunately, healthy ageing indicators are also absent from WHO's global reference list of 100 core health indicators, which are observed worldwide. Therefore, the identification and selection of key indicators of healthy ageing and older person's care in reference to UHC's targets (equity, service coverage/access, quality, financial protection) must be included in future UHC measurement frameworks. Because most indicators have their own challenges in terms of measurements and data requirements, choosing suitable outcome indicators that are globally available, especially in LMICs, is of great importance.

Policy

A high level of global and regional commitments to ensure continuing care for older persons and to include measures of the health system response to population ageing in global health and UHC measurement frameworks.

Improve global and national observatories and surveys for monitoring UHC targets in the context of population ageing.

Practice

Include proposed indicators in currently available surveys for regular monitoring to have reliable sources of information for planning the care of older people.

Develop health information systems and plan new national and subnational surveys specific to older people's care to gather necessary data on the proposed indicators.

Developing quality assurance procedures, including data collection mechanisms, for long-term care provided in nursing homes, day-care centres, home-based services, and informal care by a collaboration of different stakeholders.

Research

Develop regional and more generalized frameworks for monitoring UHC in the context of population ageing that help LMICs share their experiences with each other.

Develop practical guides for recommended indicators to be measured in different country contexts.

Nationwide studies of LMICs to define policies, programs, and care models for long-term care provisions at the home, community and institutional level.

Review of long-term care financing policies and financial protection mechanisms to protect older people against health care expenditures.

Background

Ensuring that all people can access the health services they need without facing financial hardship is key to improving the well-being of a country's population. However, universal health coverage (UHC) is more than that; it is an investment in human capital, a foundational driver of inclusive and sustainable economic growth and development, and a way to support people so they can reach their full potential and fulfil their aspirations. The United Nations General Assembly adopted 17 Sustainable Development Goals (SDGs) in September 2015. Goal 3 focuses specifically on ensuring healthy lives and promoting well-being for all at all ages [1].

Population ageing is a public health concern around the world in both developed and developing countries. From 2015 to 2050, the proportion of the world's population aged 60 and over will nearly double (from 12% to 22%) with profound consequences for health care systems [2]. UHC must be achieved in a world currently facing demographic and epidemiological transitions. To achieve UHC and ensure that people of all ages are covered, it is necessary to adapt new health system responses, especially in low- and middle-income countries (LMICs). In many developing countries, there are no sustainable mechanisms of financing, and the care systems are fragmented. We need to explore both the health sector as well as the social sector to promote the reforms necessary to overcome changes related to population ageing.

Population ageing will dramatically increase the proportion and number of people needing long-term care in countries at all levels of development. Therefore, an approach to prevent and reverse functional decline and care dependency in older age is critical to improving public health responses to population ageing [3].

As people age, their health needs tend to become more chronic and complex. A transformation is needed in the way that health systems are designed in order to ensure affordable access to integrated services that are centred on the needs and rights of older people. In most care contexts, this will require fundamental changes in the clinical focus of care for older people, as well as in the way care is organized, funded, and delivered across health and social sectors [4].

As defined by the World Health Organization (WHO), Organisation for Economic Co-operation and Development (OECD) and the European Union (EU), people in need of long-term care are persons with a reduced degree of functional capacity, physical or cognitive, and who are consequently dependent for an extensive period of time on help with basic activities of daily living (ADLs), such as bathing, dressing, eating, getting in and out of bed or a chair, moving around, and using the bathroom. This help is frequently provided in combination with basic medical care, prevention, rehabilitation, or services of

palliative care. Long-term care services also include lower-level care related to help with instrumental ADLs (IADLs), such as help with housework, meals, shopping and transportation [5].

With increasing demand for more and different kinds of services, it is imperative to shift resources towards primary care for the preventative and comprehensive care of people with chronic conditions, and establishing linkages with community support. Major innovations are underway that accelerate progress in attaining UHC for older populations. The renewed commitments under the SDGs to achieve UHC offer a unique opportunity to invest in the foundations of health systems of the future [6].

Ensuring an appropriate combination of settings for long-term care that includes both formal and informal care is crucial for this goal. The impact of increases in the older population with disabilities will fall predominantly on the long-term care sector rather than the acute health sector. This necessitates an appropriate balance of settings for long-term care, including supported self-care and home-based services. Appropriate services for older people with chronic diseases are essential, requiring the integration and coordination of care across different service providers, and between health and social care [7].

On the journey towards UHC, significant efforts have been made to target specific vulnerable populations including the poor, women, and children. However, older adults have been often overlooked. Older adults will have a large bearing on whether the goal of UHC is obtained, especially in LMICs. By 2050 it is projected that, worldwide, 8 out of every 10 people aged 60 and over will live in these countries. This increase in the proportion of older adults is, in turn, associated with an increasing demand for healthcare due to the greater prevalence of disabilities and morbidity in older age [8].

While adapting new health system responses to ageing and providing innovative solutions to the care of older persons, monitoring progress towards UHC in the context of population ageing is recommended. The most comprehensive global UHC monitoring framework was published by WHO in 2017 [1]; 16 tracer indicators of service coverage were selected to form a composite UHC index, which included four from each of the following categories: reproductive, maternal, newborn, and child health; infectious diseases; non-communicable diseases; and service capacity and access. This framework is mostly dominated by maternal and child health and does not cover healthy ageing or the health system capacities and access needed for the care of older persons.

To “ensure healthy lives and promote wellbeing for all, at all ages, as stated in the SDGs, stakeholders should consider how older adults require different approaches to health care and are often less able to pay for these services. Therefore, health systems will need to be realigned significantly to meet these targets.

The WHO global strategy and action plan on ageing and health provides a political mandate for action to enable this transformation [9].

The global strategy and action plan, which places emphasis on developing sustainable and equitable long-term care systems, suggests that implementing comprehensive systems of long-term care as well as designing age-friendly packages could accelerate improving UHC for older persons in LMICs.

The strategy focuses on strengthening health and long-term care systems at local and national levels to cover the needs of older adults through strengthening national policy, combating ageism, generating new evidence and supportive tools, and creating more age-friendly environments. Sustainable financing, a key concern of policy-makers, must also be addressed, as ageing societies are likely to present significant challenges including an ageing health workforce, higher disease burden, and increased demand for services and human resources [9].

Population ageing has a great impact on achieving UHC. Without considering the needs of older people in terms of social and health services, achieving UHC is impossible. There are some measures which should be taken by health systems to cover the needs of older people towards UHC. To monitor the progress towards UHC in the context of population ageing, it is necessary to develop suitable frameworks which include objective measures to assess actions aimed at covering the needs of older people.

Because of the knowledge gap which exists on UHC monitoring approaches and frameworks in the context of population ageing, and regarding the necessity of adapting new health system responses to meet the needs of ageing populations, this study aims to review the existing literature on older person's care and UHC measuring frameworks in order to propose a new framework to measure UHC progress in a way that is more relevant to health systems responding to population ageing.

Study objectives:

- 1-Review existing frameworks and indicators to measure UHC
- 2-Identify indicators for measuring essential services coverage and financial protection with respect to integrated and long-term care
- 3-Develop a feasible framework for measuring UHC progress in the context of population ageing in LMICs

Methodology

Design

A scoping review method was selected to systematically search and synthesize knowledge around the objectives of this study and map key concepts for measuring UHC in the context of population ageing.

A scoping review can be defined as “form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge” [10].

We followed the Arskey [11] methodology to conduct this scoping review in order to identify and classify themes and indicators to be proposed for monitoring health system responses to population ageing in LMICs to achieve UHC. To conduct the scoping review, we identified eligibility criteria in order to select studies that are relevant to the research objectives. We then selected studies based on the information gathered through a data extraction form. We next charted and presented the extracted data according to the research objectives. Finally, based on the recommendation of the Arskey methodology, we conducted an expert panel review to discuss the findings and examine the feasibility of using the proposed indicators in the context of Iran.

Eligibility criteria

We included all relevant studies at any stage of development, evaluation, or implementation of metrics or measurement frameworks. Any type of study design was included in this review, and we did not filter for date or language of the publications.

We excluded studies which solely focused on concepts and did not provide metrics or measurement frameworks. We also excluded news articles, abstracts, and those studies for which full texts were not available.

Search strategy and information sources

We searched the following databases to identify relevant studies: Scopus, ISI Web of Knowledge, PubMed, Ovid (including Cochrane Database of Systematic Reviews), and Science Direct.

An electronic search strategy was developed using MeSH (Medical Subject Headings) terms in consultation with our research team and experts including an experienced research librarian. The search strategy was revised during the review based on the knowledge gathered.

Using the research objectives and agreed keywords, we defined two categories of search strategies. The first strategy was more general in order to include the existing UHC measurement frameworks and

retrieve as many relevant documents as possible ((Appendix1), Table 1). The second was more specifically focused on the targets of UHC including quality, equity, service coverage/access, and financial protection. Through the second strategy, we aimed to gather documents which measure these targets of UHC in the context of providing continuing care for older people ((Appendix1), Table 2).

We used hand searching to check all reference lists of included studies to identify additional studies of relevance. A grey literature database, Open Grey, was also searched to identify studies, reports, and conference abstracts of relevance to this review. We also conducted a targeted search of the grey literature in international organizations' websites and related health or scientific organizations including the WHO, World Bank, OECD, United Nations Development Program (UNDP), United Nation Children's Fund (UNICEF), UHC2030, and EU.

Data Collection and Analysis

Selection of studies

We used a reference management system (EndNote X8) to manage electronic searches and remove duplicates. The review process consisted of two levels of screening: (1) a title and abstract review and (2) a full-text review.

All the titles and abstracts were screened by two reviewers. Any articles that were identified as relevant by either or both of the reviewers were included for the second step. Full-text articles were then retrieved for selected titles/abstracts that met the review criteria or when information in the title and abstract was insufficient to determine eligibility. In the second step, the two investigators assessed the full-text articles to determine if they met the inclusion criteria. Any disagreement about study eligibility at the full-text review stage was resolved through discussion with a third investigator until full consensus was obtained.

Relevant studies were included if they described the concept of older person's integrated long-term care and described UHC measurements or indicators concerned with older person's care such as service coverage, quality, equity, and financial protection measures.

Data extraction and analysis

Unlike a systematic review, which relies on a synthesis of data, a scoping review needs an analytic framework or thematic construction in order to present a narrative account of the existing literature. Based on our research objectives, the best choice for analyzing data was an informing review, which uses

evidence from qualitative research to help define and refine the question and provides descriptive/mapping analysis with limited synthesis.

A standardized data extraction form was developed by the review team. Data was retrieved on countries or regions, settings, study design, methodology, data collection and analysis, and UHC themes and indicators. Data abstraction was conducted by two of the authors (SHJ and AR) independently extracting data from all included studies. To ensure accurate data collection, each reviewer's abstracted data was compared, and any discrepancies were discussed to reach a final decision. The retrieved literature is summarized by publication date, country, main theme, aim of the study, and type of the document in Table 1.

Because of anticipated heterogeneity in the type of documents and level of detail, we decided to provide data on four main themes: quality, financial/social protection, equity, and service coverage. These themes were identified based on the research objectives, supported by the evidence from the review, and are presented in Table 2.

We identified healthy ageing measures as well as UHC composite indicators and present them as background indicators in Table 3. We then present and discuss the above themes in relation to ageing.

Subthemes in quality are summarized by frequency counts and grouped into domains around clinical issues, cognition/mental health, functional performance, psycho-social aspects, structure of care, patient centredness, and coordination of care. The core indicators were selected based on the main or most important indicators introduced in the studies and are assigned to the relevant theme in Table 4.

Regarding financial and social protection, we provide main themes and measures and assign core indicators to them in Table 5.

There was no study available on the measurement of service coverage and access measures specific to older person's care. We identified some single indicators relating to access to long-term care, which are presented in Table 6. Equity measures which could be applied to the whole population and also to older populations are presented in Table 7.

Expert panel consultation

As recommended by Arskey, we decided to conduct a panel consultation to review the results. The first panel, conducted on 24 November 2019, was focused on healthy ageing measures and approaches for quality assurance in long-term care settings which cover the needs of older persons. In the second panel,

held on 27 November 2019, we focused on the financial/social protection mechanisms and coverage of services for long-term care.

Discussion Guides

We developed discussion guides (Appendix 2) to cover the gaps which we identified in the literature review and to examine the feasibility of using the retrieved indicators in the context of Iran’s health system. All the guides were prepared in English, and the panels were conducted in Farsi. Facilitators were trained to present the questions in the most appropriate way according to the panel participants backgrounds and in relation to the study objectives.

Participants

We first prepared a long list of potential experts and policy-makers and contacted them by phone. After their approval for the dates and time of the panel, an official invitation letter along with a research brief were sent to them by email, social media, or an official university automation system. In total, nine experts participated in the panels in addition to the research team and a qualitative research expert. The summary of their profiles is provided below (all affiliations are with organizations in Iran).

<i>Position</i>	<i>Specialty</i>	<i>Sex</i>
Head of Older Person’s Care-MoH	MD-PhD	Male
Assistant Professor-IUMS	Epidemiologist	
Assistant Professor-IUMS	PhD- Health care management	Female
Professor- University of Social Welfare and Rehabilitation Sciences.	MD-PhD Psychiatrist – Geriatric medicine	Female
Assistant Professor-IUMS	PhD- Gerontology	Male
Former Head of Sustainable Development Center, Tehran Municipality	MD	Male
Head of Psychiatric Patient`s Rehabilitation Centers Department at National Welfare Organization.	MSc –Rehabilitation administration	Male
Head of Health Economics Group, Budgeting Department, MoH	PhD- Health economics and policy	Female
Head of National Center for Health Insurance Research	PhD- Health policy	Male
Assistant Professor-IUMS	PhD- Health economics	Male

Assistant Professor-IUMS	PhD- Health Disaster Management	Female
Associate Professor-IUMS	PhD- Health economics	Male
Research Assistant -IUMS	PhD candidate- Health economics	Female

IUMS, Iran University of Medical Sciences; MoH, Ministry of Health

A welcome note was presented by the principal investigators, followed by an introduction that elaborated the research objectives and primary findings. The facilitator explained about the confidentiality process, and reminded the panel that the session would be audio recorded and that their participation would be acknowledged in the final report.

The results of the panel review are summarized separately in the report and reflect the experts' opinions on the themes and indicators which were retrieved from the literature. Other indicators were proposed by the panelists, and these, along with health system requirements and data availability in Iran, are presented for each section.

Results

Study retrieval

Our search retrieved 18 437 studies. After removal of duplicate, 13514 records' s title/abstract were screened, 101 full-text articles were retrieved for further appraisal, of which 35 documents were eligible (Figure 1).

PRISMA 2009 Flow Diagram

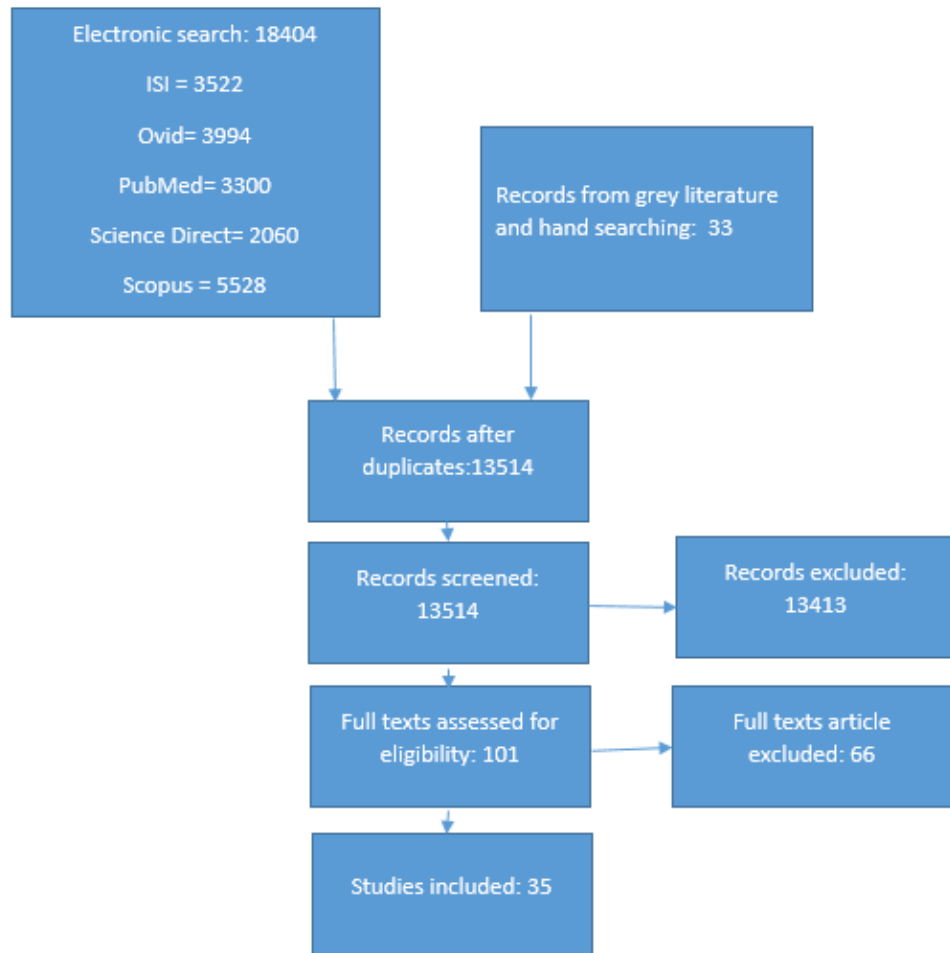


Figure 1: PRISMA flow diagram

Table 1: Study characteristics

NO	Reference	Theme	Aim	Country-Region	Type of document	Publication year
1	Public health indicators for the EU: the joint action for ECHIM (European Community Health Indicators & Monitoring) [12]	Health Monitoring	Present the European Core Health Indicators (ECHI), formerly known as European Community Health Indicators, which is the result of a long-term cooperation between EU Member States and the European Commission.	Europe	Report	2013
2	Health at a Glance 2011. OECD Indicators [13]	Health Monitoring	Present the latest comparable data and trends on key indicators of health outcomes and health systems across the 35 OECD member countries.	OECD	Report	2017
3	2018 Global reference list of 100 core health indicators (plus health-related SDGs) [14]	Health Monitoring	Provide a standard set of 100 core indicators prioritized by the global community to provide concise information on the health situation and trends, including responses at national and global levels.	Global	WHO document	2018

4	Effective coverage: a metric for monitoring universal health coverage [15]	UHC monitoring	Review the concept of effective coverage and delineate the three components of the metric: need, use, and quality. Explain how the metric can be used for monitoring interventions at both local and global levels.	Global	Paper	2014
5	Measuring progress towards universal health coverage: with an application to 24 developing countries [16]	UHC monitoring	Develop a UHC measuring indicator by breaking service coverage into prevention and treatment, and by breaking financial protection into impoverishment and catastrophic spending and measuring in 24 countries.	24 developing countries	Working Paper- World Bank	2015
6	A composite indicator to measure universal health care coverage in India: way forward for post-2015 health system performance monitoring framework [17]	UHC monitoring	Develop a methodology and demonstrate the practical application of empirically measuring the extent of UHC at the district level. Develop a composite indicator to measure UHC.	India	Paper	2016
7	Tracking universal health coverage: 2017 global monitoring report [1]	UHC monitoring	Present the results of the latest efforts to monitor the world's path towards UHC.	Global	WHO report	2017
8	Quality indicators for community care for older people: A systematic review [18]	Quality	Provide a comprehensive overview of existing quality indicators developed or applied to	--	Paper- Systematic review	2018

			assess the quality of community care provided to older people			
9	Dimensions of quality in long - term care facilities in Taiwan [19]	Quality	Determine residents' perceptions of quality of care in nursing homes in Taiwan.	Taiwan	Paper	2005
10	Identification and evaluation of existing nursing homes quality indicators [20]	Quality	Assess existing quality indicators and to determine which of them, if any, could be recommended to CMS(Centers for medicare and medicaid services) for immediate use.	USA	Paper	2002
11	Indicators of quality in long-term care facilities [21]	Quality	Identify indicators of quality of nursing care as perceived by residents, significant others, and nursing staff in long-term care facilities.	Canada	Paper	1996
12	Development of a web-based quality indicators monitoring system for long-term care facilities [22]	Quality	Develop a web based quality monitoring system for long-term care	Taiwan	Paper	2011
13	Quality monitoring of long-term care for older people in the Netherlands [23]	Quality	Describe the regulatory structure and the monitoring of quality of long-term care in The Netherlands.	Netherlands	Book chapter	2014
14	Reliability of the interRAI long term care facilities (LTCF) and interRAI home care (HC) [24]	Quality	Examine the reliability of interRAI Long Term Care Facilities (interRAI LTCF) and interRAI Home Care (interRAI HC); provide a	Korea	Paper	2015

			comprehensive and integrated assessment of instruments with common core items in Korea			
15	Quality of care in Icelandic nursing homes measured with Minimum Data Set quality indicators: retrospective analysis of nursing home data over 7 years [25]	Quality	Investigate trends in quality of care from 2003-2009 as reflected in the Minimum Data Set quality indicator outcome in Icelandic nursing homes	Iceland	Paper	2012
16	Using interRAI assessment systems to measure and maintain quality of long-term care [26]	Quality	Describe the background of the formation of the interRAI collaboration, And the development, design, distribution, and potential contribution of the interRAI approach to assess care and systematic embedding of a quality driven assessment system in care delivery. Examine three aspects generally accepted as critical to quality care: effectiveness and care safety, patient-centredness and responsiveness, and care co-ordination	OECD	OECD health policy studies	2013
17	Developing composite indicators for assessing health system efficiency [27]	Quality	Examine progress and challenges in the effective	OECD	Book chapter	2002

			measurement and application of performance indicators to improve health systems.			
18	Monitoring and Improving the Quality of Long-term Care [28]	Quality	Explore key issues in improving the performance of health and long-term care systems.	OECD	Book chapter	2005
19	Quality Assurance Indicators of Long-Term Care in European Countries [29]	Quality	Classify quality assurance indicators in different European countries according to three dimensions: organization type, quality dimensions and system dimensions.	Europe	ENEPRI research report	2012
20	Inequity in long-term care use and unmet need: two sides of the same coin [30]	Equity	Investigate the determinants of several long-term care services and unmet needs using data from a representative sample of the non-institutionalized disabled population in Spain in 2008.	Spain	Paper	2014
21	Equity-oriented monitoring in the context of universal health coverage [31]	Equity	Discuss methodological considerations for equity-oriented monitoring of UHC, and propose recommendations for monitoring and target setting.	--	Paper	2014

WHO Centre for Health Development (WHO Kobe Centre - WKC) Working Paper (#K18022)
 Findings, conclusions and implications should not be interpreted as endorsed by WHO.

22	Benefit incidence analysis of healthcare in Bangladesh—equity matters for universal health coverage [32]	Equity	Investigate the extent to which health benefits are distributed across socioeconomic groups.	Bangladesh	Paper	2016
23	An equity analysis of utilization of health services in Afghanistan using a national household survey [33]	Equity	Analyze the Afghanistan Mortality Survey 2010 on the utilization of inpatient and outpatient care, institutional delivery, and antenatal care by wealth quintiles.	Afghanistan	Paper	2016
24	Equity-focused systematic review of Viet Nam’s One Plan (2012-2016) [34]	Equity	the overall purpose of this review is improving development results particularly for most vulnerable and disadvantaged groups through evidence-based learning.	Vietnam	Paper	2014
25	Analysing equity in the use of long-term care in Europe [35]	Equity	Compare differences between European countries in the use of long-term care across income groups, for older people living at home.	11 EU countries	Report	2014
26	Measuring financial protection against catastrophic health expenditures: methodological challenges for global monitoring [36]	Financial protection	Examine the impact of varying two methodological choices by analyzing household expenditure data from a sample of 47 countries.	47 countries	Paper	2011

27	Lessons from public long-term care insurance in Germany and Japan [37]	Financial protection	Explore differences between Germany and Japan in program goals, eligibility process, scope, size, and sustainability for possible applications in the United States.	Japan and Germany	Paper	2010
28	Inequalities in financial risk protection in Bangladesh: an assessment of universal health coverage [38]	Financial protection	Investigating progress towards UHC financial risk indicators and assessed variability of inequalities in financial risk protection indicators by wealth quintile.	Bangladesh	Paper	2017
29	Financial risk protection and universal health coverage: evidence and measurement challenges [39]	Financial protection	Examine existing measures of financial risk protection.	--	Paper	2014
30	Help wanted? Providing and paying for long - term care [40]	Financial protection	Examining key policies and strategies that can help address future demand for care, and respond to the implications this will have for long-term care workforce and financing.	OECD	OECD health policy studies	2011
31	Formal social protection for older people in developing countries: three different approaches [41]	Social protection	Examine social protection for older people in three middle-income	Argentina, Thailand, and South Africa	Paper	2002

			countries: Argentina, Thailand and South Africa.			
32	Gaps in social protection for health care and long - term care in Europe: Are the elderly faced with financial ruin? [42]	Social protection	Examine the financial impacts on the elderly of private out-of-pocket expenditure on health care and long-term care in selected European countries	Europe	Policy report	2013
33	The quest for universal health coverage: achieving social protection for all in Mexico [43]	Social protection	Analyze the road to universal coverage along three dimensions of protection: against health risks, for quality assurance of health care, and against the financial consequences of disease and injury.	Mexico	Paper	2012
34	Measuring social protection for long-term care [44]	Social protection	Present the first international quantification and comparison of levels of social protection for long-term care in 14 OECD and EU countries.	OECD	Working paper	2017
35	Review of social policy (2005-2010) and draft policy note (2010-2015) [45]	Social protection	A Draft Social Policy Note prepared on request by the Ministry of Social Affairs and Housing – SoZaVo of Surinam at the outset of a new elected government for the period 2010- 2015.	Suriname and South America	Policy document	2015

As presented in Table 1, we considered 35 documents for this review including 19 peer-reviewed original studies, one systematic review, two working papers, ten reports and policy documents, and three book chapters. By thematic classification, there are three documents about global or regional health monitoring frameworks, four documents on measuring UHC, 12 studies concerning quality of long-term care, six reports and papers about equity, and ten documents on financial and social protection mechanisms. We did not apply any filters on dates or language. All included documents were published in the period of 1996 – 2018 and targeted different regions and countries including OECD, European and developing countries. We retrieved documents in different languages including French, Portuguese, and English, but all the documents that are included in the final review are published in English.

UHC measurement themes

UHC is a broad theme that covers all health system functions to ensure access to quality services without any financial hardship. We considered four main themes for measuring UHC: quality, equity, financial protection, and service coverage. These themes are supported by the evidence we retrieved (see Table 2).

Table2: UHC measuring themes

Theme	Supporting evidence (by citation number)
Quality	14, 17, 18
Equity	17, 18
Financial protection	14, 16, 17, 18
Coverage level	14, 15, 16

Table 3: Background measures

Theme	Subtheme	Indicators	reference
Health monitoring	Healthy ageing	Healthy life years	12, 13, 14
	Demographic trends	Share of the population aged over 65 and over 80 years	
Health monitoring	Self-reported health and disability at age 65	Trends in the share of the population aged over 80 years	12, 13, 14
		Life expectancy at age 65	
Health monitoring		Life expectancy at age 65 by sex	12, 13, 14
		Perceived health status in adults aged 65 years and over	
Health monitoring		Perceived health status in adults aged 65 years and over by income quintile	12, 13, 14
UHC composite indicators	Effective coverage	A composite measure which combines need, quality and utilization rates.	15
	UHC measuring index = service coverage (SC) + financial protection (FP)	<i>Measures of financial protection:</i> FP= catastrophic spending on health + impoverishing spending on health	16, 17, 18
A composite indicator to measure universal health care coverage (CUHC1)	<i>Measures of Service Coverage:</i> SC = prevention + treatment		
		CUHC1 combines <i>Service Coverage, Financial Risk Protection and Equity/Inequalities.</i>	

Based on the gaps in evidence which exist on the monitoring of ageing in global health monitoring frameworks such as the WHO global reference list of 100 core health indicators, we decided to include healthy ageing measures in the background measures section. These measures can provide a big picture of the older population (e.g. share of 65+ population) and their health status (e.g. life expectancy at 65+) at the country level. Before making any decision on health system responses to population ageing, we recommend consideration of these indicators for advanced strategic planning. We have also included UHC composite measures which combine the main UHC themes (quality, equity, service coverage, and financial protection; Table 3).

Table 4. Quality themes measured: Ordered by frequency of reporting

Settings	Sub - Themes	Core indicators	References
Community care (Includes homecare and primary care) Nursing homes	Cognition/mental health	1. Incidence of depression 2. Prevalence of antipsychotic drug use 3. prevalence of dementia	18, 19, 20, 21, 24, 25, 26, 28
	Clinical issues	4. Number of falls 5. Incidence of nosocomial infections 6. Unplanned weight gain or loss 7. Prevalence of pressure ulcers 8. Incidence of over medication and medication errors. 9. Faecal incontinence 10. Prevalence of malnutrition 11. Residents with poorly managed pain	18, 26, 24, 25, 27, 20
	Functional performance/status	12. Incidence of use of physical restraint 13. Preventable decline of ADL and IADL functioning	24, 25, 18, 20, 26, 27
	Psycho-social aspects: Social interaction Social engagement Social life Psychosocial function	14. Social engagement and privacy protection	18, 19, 25, 26, 27

	Structure of care: Nature of facility Quality of care organization	15. Quality and safety of buildings (e.g. fire hazards, sanitation) 16. Amenity of housing environment 17. Size of rooms 18. Staff ratios; mix of staff qualification	18, 21, 23, 28
	Patient-centredness: Responsiveness Caring attitude	19. Mechanisms to protect resident rights 20. Procedures of resident assessments used for care planning	19, 16, 29
	Continuity and coordination of care	21. Well-functioning transfer and discharge management 22. Requirements for clinical records and process of care documentation 23. Maintaining a quality assurance committee 24. Well-balanced diet 25. Patient safety	18, 29, 26
	End of life care	None identified	18

We identified eight main themes to measure the quality of older person’s care in different settings including long-term care, community care, and nursing homes (Table 4). These themes were selected based on their frequency in the literature. Each theme was repeated at least twice, except the end-of-life care, which was included in just one document with no related indicator, but is considered an important theme to be included in the review. Then we assigned a number of core indicators to be measured in each theme. We have retrieved more than 300 quality indicators. These core indicators were also selected based on their repetition in the literature, and they are indicated as a main or highlighted indicator in the text. Totally, we identified 25 core indicators to measure the quality of long-term care provided for older people.

Table 5: Financial/ social protection measures

Measures/themes	Core Indicators	Reference
Expenditure patterns	<ol style="list-style-type: none"> 1. Public long-term care (LTC) spending for older persons (percentage of health budget) 2. Public expenditure on health care and LTC (percentage of GDP) 3. Percentage of private LTC expenditure 4. Percentage of older persons covered by LTC insurance 5. Population aged 50+ utilizing LTC by per capita household income quintiles (percentage) 6. LTC expenditure (health and social components) by government and compulsory Insurance schemes, as a share of GDP 7. Government and compulsory insurance spending on LTC (health) by mode of provision 8. Annual growth rate in expenditure on LTC (health and social) by government and compulsory insurance schemes, in real terms 	37, 40, 41, 13
Financial protection: Out of pocket payment Catastrophic expenditure Impoverishment Distress financing (borrowing or selling assets)	<ol style="list-style-type: none"> 9. Out-of-pocket (OOP) health expenditure by households as a proportion of total income 10. OOP health expenditure by households as a proportion of disposable income 11. Percentage of aged households with OOP expenditure on health care 12. Health-related OOP expenditure as a percentage of older people's household gross income by different items 13. Incidence of catastrophic health expenditure: Proportion of households in a population who face catastrophic health expenditure 14. Mean positive catastrophic overshoot: Percentage points by which household spending on health exceeds the threshold for catastrophic health expenditure 15. Incidence of impoverishment: Proportion of households in a population who fell into poverty due to health spending 16. Compensating for the opportunity cost of providing informal care: Informal care compensation rate 	39, 38,43, 44, 41
Social protection:	<ol style="list-style-type: none"> 17. Proportional amount of cash transfers to every poor household to meet the equivalent poverty line 	45, 44

<p>Adequate social care</p> <p>Income support</p> <p>Independent living arrangements</p>	<p>18. Percentage of public benefits to the +65 population</p> <p>19. Coverage of family counseling on older persons home care provided through social workers and health care specialists</p> <p>20. Geographic coverage of day care centers for older persons</p> <p>21. Counseling and advising services within day-care institutions specialized for older persons living independently</p> <p>22. Coverage of social housing programs among older people: Percentage of independent older persons benefiting of home improvements or social housing programs</p>	
--	---	--

Total expenditures, financial protection, and social protection, were the main themes identified in this study in relation to financial and social arrangements for older person’s care that should be measured in the context of UHC (see Table 5). The share of public and private expenditure in long-term care spending is one of the most important health system indicators. Financial protection includes measures of out-of-pocket costs, catastrophic cost, and impoverishing expenditure. Distress financing is also introduced as one of the possible measures for which we did not find any related indicator. Social protection includes measures on social care, income support, and independent living. In total, we present 22 indicators in this section.

Table 6: Access/coverage themes and indicators

Theme	Indicator	Reference
Recipients of long-term care Informal caregivers	1. Proportion of people aged 65 and over receiving long-term care 2. Share of long-term care recipients, by age 3. Share of long-term care recipients aged 65 years and over receiving care at home	13, 34
Long-term care workers	4. Share of informal caregivers among population aged 50 and over 5. Long-term care workers per 100 people aged 65 and over	
Long-term care beds in institutions and hospitals	6. Long-term care workers and population aged 80 and over 7. Long-term care beds in institutions and hospitals 8. Trends in long-term care beds in institutions and hospitals	
Community-based and district health centres	9. Increase in the number of district health care centres for older people (percentage) 10. Older persons having access to community-based health care (percentage)	

Table 6 summarizes the themes and indicators that measure the coverage level of and access to long-term care, health centres, and community-based health care. Based on our review, ten useful indicators were identified to measure service access, the share of long-term care recipients among older people, the share of informal caregivers among the older population, and the ratio of long-term care beds and workers to the older population.

Table 7. Equity measures

Equity measures	Reference	Stratifying variables	Outcome variables
Inequity index (CHI)	30	--	Long term care utilization
Slope index of inequality concentration index/Concentration curves	31, 33, 35	Ordered subgroups, such as wealth quintiles or education levels.	Global health inequality monitoring Utilization of health services Equity in the use of long-term care
Variance type measures Theil index	31	Unordered subgroups, such as regions or racial/ethnic groups.	Global health inequality monitoring
Benefit Incidence Analysis (BIA)	32	Summing total benefits within socio-economic groups, resulting in total benefits for each quantile.	Equity in access to and utilization of healthcare
Horizontal inequity indices	35	--	Equity in the use of long-term care

Inequalities are often observed in financing arrangements and service utilization to the detriment of older people. Based on the results of our review, there were no specific approaches or measures for assessing the inequality in use of health services or financing mechanisms for older persons. However, there are some studies which investigate the equity in long-term care use [30, 35] by applying inequity or concentration indexes. There are certain measures (see Table 7) which are applicable in different settings. Overall, using measures that best represent inequalities among different age groups is recommended.

Results of the panel reviews

Background of national ageing laws and regulations in Iran

Some national policies and mandates in Iran emphasize the provision of health and social care for older persons and define the roles and responsibilities of different organizations and stakeholders.

Based on the “Third Development Plan Act (2000-2004)”, the Welfare Organization of Iran is required to organize the care and rehabilitation of patients who suffer from chronic mental illnesses, as well as older persons care in the first year of the Act, and prepare, develop, and implement the Act for improving the situation of these vulnerable groups.

Under this Act, the Ministry of Health and Medical Education was obliged, in cooperation with the Program and Budget Organization, to prepare and approve the executive regulations. After approving these regulations, the National Council for Older Persons was formed in 2004, headed by the Minister of Health and Medical Education and the secretary of the head of the National Welfare Organization, with members from various ministries and agencies.

The law on the “Structure of the Comprehensive Welfare and Social Security System”, which was adopted by the parliament in May 2004, contains comprehensive laws on social issues, including population ageing. Paragraphs (A), (C) and (Y) of the first Act refer to "retirement," "disability," "widows," and "aged people" as persons whom the government must protect against social, economic, and natural events as well as their consequences.

The most comprehensive and updated document which highlights the role of each organization and intersectional collaboration and is approved by different stakeholders is the National Document of Older Persons. This document was announced by the secretary of the National Council of Older Persons in 2017. This document includes the strategic and action plans for older persons in Iran and elaborates on the current regulations, situation analysis of older people, health care for older people, and organizations which provide care for older people. Based on this document, the ageing population in Iran is defined as the population aged 60 and over. We used this definition to pursue further discussions on indicators and measurement issues.

Healthy ageing measures

As presented in the review section, these measures can provide a big picture of the older population (e.g. share of 65+ population) and their health status (e.g. life expectancy at 65+) at the national level. Before making any decision on health system responses to ageing, considering these kinds of indicators is necessary for advanced strategic planning. All measures we retrieved from the literature are presented in this section and discussed by participants.

Healthy life years

The first indicator was healthy life years (HLY), also called disability-free life expectancy (DFLE), and is defined as the number of years that a person is expected to continue to live in a healthy condition. It is based on age-specific prevalence (proportion) of the population in both healthy and unhealthy conditions and on age-specific mortality information. A healthy condition is defined as one without limitations in functioning and without disability. This indicator is not regularly calculated or observed in Iran. The last national estimation was reported in 2003 [46]. International estimates for disability-adjusted life years (DALYs) and healthy life expectancy (HALE) by age and sex are available for 1990-2017 [47].

Life expectancy at age 65+ (by sex)

The age for considering a person an older adult in Iran is 60+, thus, the panel proposed to consider the life expectancy at age 60+ as a background indicator. The life expectancy at birth is reported by the National Statistical Center of Iran every 5 years through the Population and Housing Census (hereafter, Census). This indicator is reported at the national level and in each province separately by sex and also residential status (urban and rural), providing a considerable opportunity for equity analysis. However, life expectancy at age 60+ is not observed by government or health systems in Iran.

Share of population aged over 60 and its trend

The Census, is the most credible national reference for population estimates.

The data is presented in 5-year intervals (0-100 years old). Therefore, estimating the share of the population aged 60 years old and over as well as 75 years old and over and 90 years old and over is possible. The trend at which the population is ageing is also retrievable from this census.

Perceived health status

Perceived health is an indicator of overall health status. Respondents to the Census are asked to rate their health as excellent, very good, good, fair, or poor. There are several single studies in

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

different parts of the country which assess the perceived health in older persons [48, 49], but there is no national survey to assess and report this indicator on a regular basis. A comprehensive survey of the health status of older persons was conducted in five provinces in 2015 and included quality of life assessments using the Short Form (SF36) Health Survey questionnaire for patient reported survey.

There is also a comprehensive integrated information system implemented in primary health care (PHC) settings in Iran called Sib. This system aggregates data from local to national levels and covers whole the population in rural level and is amid to cover the populations in urban areas by active follow ups and screening. This information system covers some specific indicators for older people aged 60 and over. These indicators gather information on blood pressure, nutrition screening, risk of falls, depression, medicines, oral health, hearing and visual impairment and D3 supplements. This platform could be a very useful source for monitoring the health status of older persons in different parts of the country.

Proportion of population aged 60 and over (single) living alone

One new indicator proposed by the panelists to be included is loneliness. This indicator shows the proportion of older persons who are living alone or with their family, are single (never married, widowed, or divorced) or married. The data related to this indicator is retrievable from the Census.

Long-term care in Iran

In Iran, the practical definition of long-term care for older persons refers to providing health and social care to older people who need support for their basic ADL. Based on the definition of the Welfare Organization, an older person is a person aged 60 and over, with persons aged 60-70 years old as young older, aged 71-80 years old as middle-aged older, and aged 80+ years old as oldest olds. An older person's rate of dependency is calculated by the Barthel scale of ADL. People with scores between 75-99 have minimum dependency, scores between 50-74 have average dependency, and scores between 0-49 have maximum dependency.

Nursing homes

Based on the global strategy and action plan for ageing, long-term care could be provided at the home, community, and institutional levels. In Iran, the most recognizable and formal provider of long-term care for older persons is nursing homes. Nursing homes or the day and night rehabilitation and care centre for older persons is a place licensed and supervised by the Welfare Organization and provides services to eligible older people.

Day care

These centres were established with the authorization and supervision of the Welfare Organization to provide eligible older persons with day-to-day training, educational, medical, social, and vocational rehabilitation by a qualified team. To be accepted to these centres, a person must be at least 60 years old and have minimum or average dependency needs on the Barthel scale. Services in these centres are categorized in three areas including training services (e.g. self-care, healthy lifestyle, and training workshops on handicraft, painting, music, etc.), rehabilitation services (e.g. physiotherapy, occupational therapy, and family counselling), and recreational services (e.g. tours, movies, concerts, etc.).

Human resources for these centres include medical doctors, psychologists, social workers, physiotherapists, occupational therapists, speech therapists, and nurses who are working part- or full-time.

Community-based care

The most prominent example of the community-based platform for older persons in Iran is services provided by the municipality of Tehran through the Older People's Association. The municipality established the Older People's Association program in 2006 as a network of older people's clubs aimed to promote the health status and social participation of older people in Tehran and to increase voluntary participation in community-based activities. The aims and objectives of the program have evolved over time from initially promoting social presence and participation to comprising a social intervention that older people are involved in managing and running [50].

All citizens of the Tehran metropolitan area who are aged 60 and over are eligible to participate in older people's clubs, and membership is free of charge. The main activities of this program include: training courses in various health-related and sociocultural areas; leisure activities, sports events, and music performances; biweekly health check-ups; fundraising activities; intergenerational activities; and an honorary card providing discounts and benefits. More than 60 000 older people are registered in these clubs and are provided with social and health services (e.g. health check-ups in Health Houses of the municipality) [50]. It is noteworthy that this platform is only provided in the municipality of Tehran and is not scaled up across the country.

Home-based services

There are some clinics which provide home health services in Tehran and some major cities to older persons (e.g., home visits and nursing care). Some of these clinics are authorized by the Ministry of Health Nursing Office and others are privately run and licensed by the Ministry of the Interior.

Home care

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

Most older people who need long-term care are receiving it in their homes by family members (Figure 2). There are many cultural and financial reasons that encourage families to provide their older members with care at homes. This is an opportunity for older people to age at their place and avoid isolation, however, the supporting family members face difficulties to provide such care and thus there is a need to recognize such care and support informal caregivers.

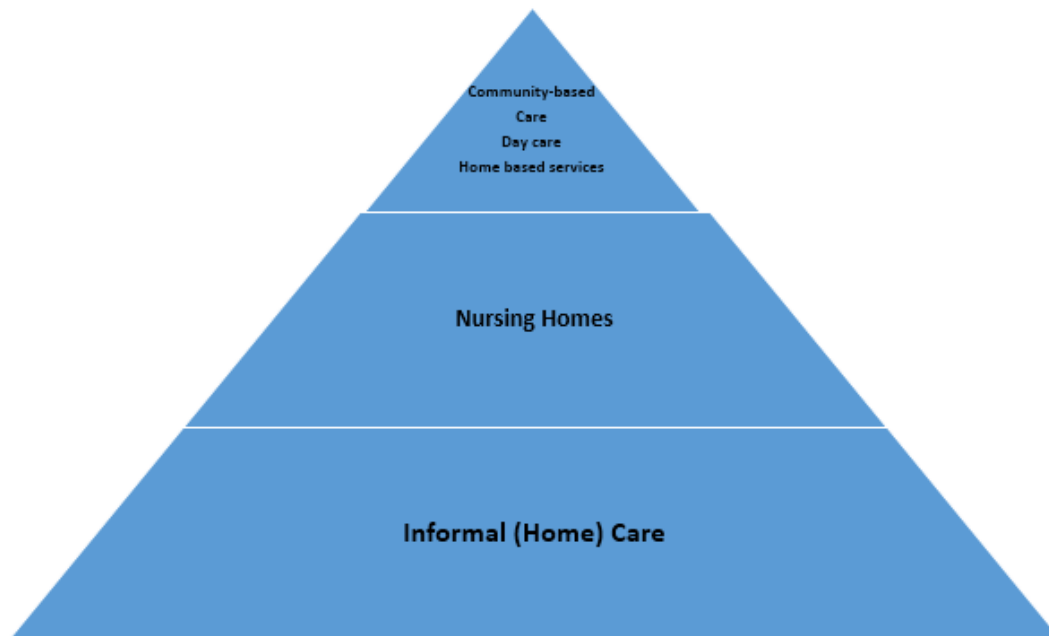


Figure 2: Pyramid of long-term care for older persons in Iran

Coverage

The results of the review on measuring coverage levels and discussions by the panelists are presented in this section.

To discuss the indicator “proportion of people aged 60 years and over receiving long-term care”, all kinds of long-term care in Iran were elaborated in the panel discussions, and are mentioned above. There is no specific data or survey that can be used to estimate the proportion of older people who receive informal care in their home by family members and relatives.

For nursing homes and day care, because these homes are licensed and registered by the Welfare Organization of the respective province, the data on the number of older people at these centres are retrievable from the National Welfare Organization.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

As mentioned above, the only official platform for community-based care in Iran is older persons' clubs in the municipality of Tehran. For the rest of the country, there is no official structure for such kind of care. Although some organizations and companies provide their retirees with such clubs and community-based activities, the proportion of people they cover is quite small.

The numbers of day-care centres for older persons and their geographical distribution within and between cities are retrievable from the Welfare Organization.

There is no specific category for long-term care workers for human resource management in the Ministry of Health or the National Welfare Organization. Services are provided in nursing homes, hospitals, or day care centres based on specialty (e.g. nursing, physiotherapy, etc.). Because there are no long-term care beds in hospitals, the only way to classify long-term care workers could be to identify the number of full-time workers in nursing homes and day-care centres and comparing the standards of these homes and centres with those defined by the National Welfare Organization.

There are also some academic majors like geriatric nursing and geriatric psychiatry at medical universities, but graduates are not obliged to work in long-term care settings. There is also a new program run by the National Nursing Association and Applied Science University to train nurses for long term care.

Estimates for long-term care beds in institutions and their trend can only be retrieved for nursing homes, as the only residential setting providing long term care for older people.

Proposed indicators

- Proportion of older persons (aged 60 and over) who are receiving care at nursing homes at the national and provincial level (by sex)
- Proportion of older persons (aged 60 and over) who are receiving care at day-care centres at the national and provincial level (by sex)
- Ratio of day-care and nursing homes in each province to the population aged 60 and over
- Number of beds and their trend in nursing homes at the national and provincial level
- Occupancy rate of beds in nursing homes

Quality of care

Based on the information from the panel, there is no specific organization or office that monitors the quality of long-term care provided to older persons in nursing homes, day-care centres, or home-based

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

services. There are certain standards of physical environments and human resources required under the authorization of the Welfare Organization, which are defined in the regulations related to nursing homes and day-care centres.

There are some periodical visits to the authorized centres by the Welfare Organization to check the standards defined in the regulations. The main purpose of these visits is making decisions about reauthorization of the centres. Nursing homes are graded A, B or C based on the requirements they meet. The centres are allowed to charge different fees based on their rank.

The following themes and indicators retrieved from the literature are observed in the regulation of establishing nursing homes and day-care centres in Iran.

Functional performance/status:

-ADL functioning is measured by the Barthel scale

Structure of care:

-Quality and safety of buildings (e.g. fire hazards, sanitation)

-Amenities of the housing environment

-Size of rooms (e.g. nursing station, GP visit room, family visit, training)

-Staff ratios; mix of staff qualifications

Continuity and coordination of care:

-Well-functioning transfer and discharge management

-Requirements for clinical records and process of care documentation

-Well balanced diet

Financing of long-term care

The results from the review on financing issues of long-term care were categorized into three main themes: financial protection, social protection mechanisms, and expenditure patterns. Retrieved indicators in each section were presented to the panel, and the results are provided below.

Expenditure pattern

As presented above, in Iran, long-term care is mostly provided in nursing homes, which are supervised by the Welfare Organization, and there are no long-term care beds in hospitals. In addition, the informal care of older persons at homes is not recognized.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

Based on the health accounting systems, data on national health accounts using the System of Health Accounts 1.0 (SHA1) is available from 2001 to 2017, but is not age-specific and does not provide information on the share of older persons from total health expenditure. The new version of accounting, System of Health Accounts 2011 (SHA2011), is in its pilot phase in Tabriz city and provides age-specific expenditure on health. In this system, there is a definition for long-term care expenditure in general, but it is not specific to older persons. The SHA2011 system is expected to be implemented in the whole country next year, providing age-specific health expenditure. Another hospital information system (HIS) that provides age-specific expenditure at the national level is SEPAS, which aggregates information on inpatient costs from more than 600 public hospitals.

About the insurance coverage for long-term care, the panel observed that there is no specific scheme, fund, safety net, or co-payment mechanism specific for long-term care or older person's care.

Proposed indicators

-Share of the budget going to nursing homes from the whole government budget

Financial protection

Out-of-pocket expenditure on health is reported in national health accounts using the SHA1 accounting system, but there is no information on older persons who are spending on health out-of-pocket. Therefore, indicators for estimating the percentage of older people's spending out-of-pocket on health is not feasible.

The incidence of catastrophic and impoverishment due to health spending is also observed using information from National Statistical Center, but is not specifically retrievable for older people. The informal care of older persons is not recognized by the government as a mode of long-term care, and this kind of care is not paid by any organization, therefore there is no compensation to protect families who are caring for their older members to be measured.

Social protection

Cash transfers to households in Iran include government subsidies to all Iranian citizens living within the boundaries of the country. A predefined amount of money is paid on a monthly basis to the households, and there is no distinction between poor or wealthy families. This program was implemented in 2007, and there have always been efforts to make it more equitable and to exclude wealthy families in favor of poor ones. This year a means test was proposed to be implemented by the Ministry of Welfare to distinguish between poor and wealthy households for paying the subsidies.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

For poor older persons, there is some financial support by different organizations. A program called “empowering older people” by the Welfare Organization provides poor older people with non-cash credit for buying rehabilitation and medical supplies. Moreover, eligible older persons who are defined as poor by the Welfare Organization and need to be admitted to nursing homes are exempt from paying the fee.

Another social protection program which is specifically implemented to cover the needs of older people is Shahid Rajaei program supported by Imam Khomeini Charity Fund which supports older people (aged 60 and over) in rural areas in terms of housing allowance, special allowance for their children, marriage loans and living expenses.

The coverage of family counselling on older person’s home care is also provided by the Welfare Organization through visits of a social worker at the person’s home. These services are provided to older persons who are registered with the Welfare Organization as mostly poor, living alone, and not supported by their families. Advising services are provided in day-care centres for older persons by psychologists.

Proposed indicators

- Proportion of poor older persons who are admitted to nursing homes free of charge
- Proportion of older persons who are registered and supported by the Welfare Organization at the national and provincial level
- Proportion of older persons in rural areas who are supported under the Shahid Rajaei program

Discussion

During this study, we identified key UHC measurement themes and indicators which could be applied to measuring UHC in the context of population ageing including in LMICs. We discuss these themes and indicators below.

Background measures:

Health monitoring

Before starting to analyze UHC measures in the context of population ageing, we decided to provide some background indicators which are measured globally to monitor the health status of the population. We identified three major references [12, 13, 14] which present health monitoring frameworks at the global, European, and OECD levels. We found that healthy ageing indicators are not included among WHO's 100 core health indicators, which are measured and monitored worldwide. Despite the growing figure of older people around the world, these findings show how neglected healthy ageing is in comparison to other areas like maternal and child care or non-communicable diseases.

In the European health monitoring framework, there is no direct measure to monitor healthy ageing. Some current measures on risk factors such as tobacco use or blood pressure have been indirectly linked to healthy ageing. In the case of OECD countries, there are indicators which represent healthy ageing or service utilization by older people that we provide in our findings and recommend to be considered globally.

UHC measuring

There are composite measures in UHC monitoring frameworks [1, 15, 16, 17] which combine the main UHC themes of service coverage, financial protection, equity, and quality, and are measured globally. One of these composite indicators is effective coverage.

Effective coverage is defined as the fraction of potential health gain that is actually delivered to the population through the health system given its capacity. It is comprised of three components, namely, need, use, and quality. Need refers to the individual/population in need of a particular service; use refers to the use of services; and quality refers to the actual health benefits experienced from the service [15].

Given the broad range of health services delivered by health systems today, measuring effective coverage for every intervention would be impossible [15]. To use this indicator as one of the UHC monitoring measures in ageing populations, countries should define a high priority list of interventions for older people's care to be measured at the national and district levels and to be used to benchmark health system performance.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

In global health and UHC monitoring frameworks [1,16], there is an emphasis on maternal care and infectious disease, and even some consideration of non-communicable diseases, but hardly anything related to healthy ageing. Therefore, we recommend to refine the frameworks to consider healthy ageing as well as relevant service coverage indicators to measure and monitor the health status of an ageing population and progress toward UHC.

Quality

With nations committed to achieving UHC by 2030, there is a growing acknowledgement that access to services is not enough. Improvement in health care delivery requires a deliberate focus on the quality of health services, which involves providing effective, safe, people-centred care that is timely, equitable, integrated, and efficient [51].

Quality is a broad concept which includes various aspects of care. Because quality care is one of the main themes in UHC measurement, we tried to comprehensively provide subthemes of quality care at the institutional level.

Long-term care systems bring together a range of services for people who depend on ongoing help with ADL due to chronic conditions of physical or mental disability. Current concerns about improving quality of care and enhancing consumer choice are likely to pose continuing challenges for national policy-makers in seeking to balance the provision of good-quality care with sustainable costs to both public and private budgets [28].

Currently, process quality indicators focusing on clinical aspects and specific diseases are overrepresented. While the tendency to measure care performance is shifting from process to (patient-reported) outcome measures, valid outcome indicators for the quality of care for older people are still relatively limited. It would be desirable to find a better balance between measuring processes and outcomes [18]. Major outcome indicators, such as falls and fracture rate, prevalence of dementia, and incidence of depression among older persons, could be presented in a UHC measurement framework to monitor the quality of care for older people.

Based on the panel discussions, there is no specific procedure or framework (e.g. interRAI or European framework for long-term care quality insurance) to monitor the quality of care which is provided in nursing homes and day-care centres in Iran for older persons. Rather, there is just a set of regulations which is prepared by the Welfare Organization to license or grade these institutes. In this regulation, some standards of the care structure including the safety of buildings and human resources are observed. Patient-centredness is not observed as a principle to provide long term care to older persons, and outcome indicators, including mental and clinical issues, are not monitored as quality assurance procedures. As the need for long-term care is growing and more families are interested to use such services for the care of their older members, it is necessary to implement official procedures for quality assurance. It is also important for the Ministry of Health and the Welfare Organization, which is licensing these centres, to collaborate with each other to develop such procedures to ensure the quality of care.

Financial protection

Although the health status and quality measures should be measured specifically for older persons, financial protection measures should be more general. Out-of-pocket costs, catastrophic expenditures, and impoverishing expenses are major indicators of measuring financial protection in varied settings. Key is measuring these indicators in different age groups including households with 65 years and older members. To calculate catastrophic expenses for older persons, selecting a suitable threshold (total expenditure non-food expenditure, non-subsistence expenditure, etc. [36]) is important to best represent the financial considerations for this vulnerable group.

At the country level, the incidence of financial catastrophe, impoverishment, and associated inequalities are routinely measured to understand if the situation is improving. Where possible, catastrophic overshoot and the difference in the poverty gap should also be measured for further insights [39].

In the case of health expenditure and the share of public or private sector to provide care to older people, there are some indicators like the share of long-term care from the public budget/GDP or percentage of older persons covered by long-term care insurance.

In many countries, ageing care, especially long-term care (e.g. nursing homes), is provided within the social sector or by the municipalities. In these cases, it is important to consider the costs and mechanisms of financial protection that are provided outside of the health sector.

Long-term care includes both health and social-care services. However, it is not always straightforward to separate the two components for long-term care. Different countries may report the same spending item under health or under social services, following country practices or the division of responsibilities for long-term care across government authorities. Such variation in the treatment of long-term care spending reduces the comparability of some key indicators, such as the share of health expenditure to GDP [40].

Total long-term care spending is calculated as the sum of services of long-term health care and social services of long-term care. The first term, which represents health-related long-term care spending, includes palliative care, long-term nursing care, personal care services, and health services in support of family care. The second term includes home help (e.g., domestic services) and care assistance, residential care services, and other social services [40].

In other words, the health component of long-term care spending includes episodes of care where the main need is either medical or personal care services (ADL support), while services whose dominant feature is help with IADL are considered outside health-spending boundaries [40].

There are significant gaps in national social protection systems for both health care and long-term care. Thus, while adequate social protection in health care and long-term care is a human right and legislation does exist, such systems are not sufficiently implemented to adequately cover all older people in European countries [42]. Gaps in European social protection systems for health care and long-term care covering frail older persons frequently result in high levels of out-of-pocket expenditure for the poorest, inequities in access to needed services, and, for some of the most vulnerable, financial ruin [42].

Based on our findings, in Iran, there is no specific insurance scheme, fund, safety net, or co-payment mechanism to protect older people against the financial risks of health expenditures. Older persons who are retired from an organization and have basic insurance coverage are sometimes provided with supplementary coverage specific for older persons. However, for the general population, there is no distinction between different age groups for co-payment mechanisms.

Another issue which should be considered while deciding about the financial protection of older persons is “income support”, which emerged as a theme in our review. Older people are a vulnerable group of the population who are mostly retired or are unable to work due to health problems and chronic conditions. At the same time, they require special health care which imposes cost on the persons or their families. Thus, supporting them in terms of any kind of income support, subsidy, or safety net seems necessary to avoid catastrophic cost. Protecting older persons against catastrophic or impoverishing cost not only requires mechanisms that reduces the amount of out-of-pocket expenses paid, but also needs to raise the persons’ ability to pay. Therefore, collaboration with the social sector in this part is crucial. We included “social protection” as one of the themes in the financial protection of older people and achieving UHC in ageing populations.

In Iran, the most significant example of social protection for older persons is the mandate of the Welfare Organization to protect vulnerable older people for which the organization is receiving a specific budget each year. Poor older persons are registered by this organization to be covered for a range of financial and non-financial support (e.g. medical and rehabilitation services). However, the proportion of older people covered by the Welfare Organization is quite small, and there is a need for more generalized programs to improve the situation of this population.

Coverage level

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

Since the need for long-term care services can be broadly interpreted, governments should first focus on developing entitlement standards that determine access to services that are partly or totally publicly funded. As in health care, fair access should be regarded as the first criterion for measuring quality in long-term care [27].

UHC has three main dimensions: population coverage, financial protection, and service coverage. Coverage or access to essential services in ageing care is a broad concept that can be viewed from different perspectives including the coverage of specific diseases or access to specific interventions/medicines. In this review, we focused on long-term care as an essential setting to provide older people with care and services designed for chronic conditions such as dementia and functional disabilities, as well as social care. We identified some indicators to measure access to long-term care including populations receiving long-term care, the availability of long-term care workers, beds, and access to community and district health facilities by older persons.

In order to measure the coverage level of the services, the availability of the services should be discussed, before deciding about the measurement issues. As presented in the results of the panel, the long-term care services for older persons in Iran are provided at the home, community and institutional levels. Regarding the home level, there are no data available for the quality of care, which is provided as informal care, indicating the importance of conducting national and provincial surveys to estimate the volume of such care for strategic planning in future years. At the institutional level, by using data from the Welfare Organization, the number and geographical distribution of nursing homes and day-care centres are retrievable and could be used for further planning. Another type of service is home-based care, which is provided by private clinics or nursing companies, but there are no surveys that analyze the pattern of such services within and between cities.

Equity

Equity is an overarching principle which influences all other aspects of UHC. Equity is usually measured as both financing and service provision to the population. There are common measures of equity which we retrieved in this review including the concentration index/curve, horizontal inequity index, slope index of inequality, variance type measures, and the Theil index.

To analyze data for equity purposes, it is necessary to have information by age, sex, and socioeconomic characteristics at the national and subnational level. For the coverage level of long-term care in nursing homes and day-care centres in Iran, the data could be disaggregated by sex at different provincial levels. However, the majority of long-term care for older people is provided at the home by family members or by formal home-based services for which no data is available regarding equity.

To ensure equity in ageing populations, it is important to measure these indices in different age groups to avoid age discrimination when providing services.

Conclusion:

There is no specific framework available to measure UHC in response to population ageing. Moreover, existing frameworks for monitoring UHC lack specific indicators for older people's care. Unfortunately, healthy ageing indicators are also absent from WHO's global reference list of 100 core health indicators, which are observed worldwide. Thus, the identification and selection of key indicators of healthy ageing and older person's care based on UHC targets (equity, access, quality, financial protection) should be included in future UHC measurement frameworks. Because most of the indicators have their own challenges in measurement and data requirements, choosing suitable outcome indicators that are globally available, especially in LMICs, is of great importance.

In most LMICs, the great share of long-term care of older persons is provided at the home by informal care. This situation makes the monitoring of care in terms of coverage level and quality of care complicated. Moreover, providing long-term care insurance is not developed in LMICs like what is offered to older persons in Germany or Japan. In Iran, there are fragmented financial support systems for poor older people to be admitted in nursing homes free of charge or using non-financial support for their medical and rehabilitation services.

While populations are ageing in developing countries, the structure of families is also changing such that the management of informal care for the next several decades is necessary. Using the capacity of informal caregivers by compensating their services will help to implement "ageing in place" strategies. Providing long-term care does not necessarily mean developing institutional level care. There will be a shift from institutional care to home-based care by empowering older people and their families. The social part of long-term care should be more highlighted in future ageing agendas, which could be improved by community-based channels.

To best monitor UHC in ageing populations and strategic planning for the coming decades, it is crucial to develop health information systems and plan new national and regional surveys specific to older people's care to gather necessary data on monitoring indicators. Including the proposed indicators in currently available surveys to be monitored on a regular basis is also another way to have reliable sources of information for planning the care of older people.

References

1. World Health Organization. Tracking universal health coverage: 2017 global monitoring report. World Health Organization, Geneva; 2017.
2. World Health Organization. Integrated care for older people: realigning primary health care to respond to population ageing. World Health Organization, Geneva; 2018.
3. World Health Organization. Integrated care for older people: guidelines on community-level interventions to manage declines in intrinsic capacity. World Health Organization, Geneva; 2017.
4. World Health Organization. Global strategy and action plan on ageing and health. World Health Organization, Geneva; 2017.
5. Joshua L. Aging and Long Term Care Systems: A Review of Finance and Governance Arrangements in Europe, North America and Asia-Pacific. Vol. 1705, Discussion Paper. World Bank, Washington (DC); 2017.
6. Barber SL, Rosenburg M. Aging and universal health coverage: implications for the Asia Pacific Region. *Health Systems & Reform*, 2017; 3(3): 154-158.
7. Rechel B, et al. How can health systems respond to population ageing. 2009, Copenhagen: WHO Regional Office for Europe.
8. Van der Wielen, N, Channon AA, Falkingham J. Universal health coverage in the context of population ageing: What determines health insurance enrolment in rural Ghana? *BMC public health*. 2018; 18(1): 657.
9. Sadana R, Soucat A, Beard J. Universal health coverage must include older people. *Bulletin of the World Health Organization*. 2018; 96(1): 2.
10. Colquhoun HL, et al. Scoping reviews: time for clarity in definition, methods, and reporting. *Journal of clinical epidemiology*. 2014; 67(12): 1291-1294.
11. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International journal of social research methodology*. 2005; 8(1): 19-32.
12. Verschuuren M, et al. Public health indicators for the EU: the joint action for ECHIM (European Community Health Indicators & Monitoring). *Archives of Public Health*. 2013; 71(1): 12.
13. Indicators, O., Health at a Glance 2011. OECD Indicators, OECD Publishing, Paris DOI: https://doi.org/10.1787/health_glance-2015-en Accessed February, 2015; 15: 2016.
14. World Health Organization. 2018 Global reference list of 100 core health indicators (plus health-related SDGs). World Health Organization, Geneva; 2018.
15. Ng M, et al. Effective coverage: a metric for monitoring universal health coverage. *PLoS medicine*. 2014; 11(9): e1001730.
16. Wagstaff A, et al. Measuring progress towards universal health coverage: with an application to 24 developing countries. *Oxford Review of Economic Policy*. 2016; 32(1): 147-189.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

17. Prinja S, et al. A composite indicator to measure universal health care coverage in India: way forward for post-2015 health system performance monitoring framework. *Health policy and planning*. 2016; 32(1): 43-56.
18. Joling KJ, et al. Quality indicators for community care for older people: A systematic review. *PloS one*. 2018; 13(1): e0190298.
19. Chao SY, Roth P. Dimensions of quality in long - term care facilities in Taiwan. *Journal of advanced nursing*. 2005; 52(6): 609-618.
20. Berg K, et al. Identification and evaluation of existing nursing homes quality indicators. *Health care financing review*. 2002; 23(4): 19.
21. Grant NK, Reimer M, Bannatyne J. Indicators of quality in long-term care facilities. *International Journal of Nursing Studies*. 1996; 33(5): 469-478.
22. Huang EW, et al. Development of a web-based quality indicators monitoring system for long-term care facilities. In: 2011 4th International Conference on Biomedical Engineering and Informatics (BMEI); 2011.
23. Schols J, et al. Quality monitoring of long-term care for older people in the Netherlands, in *Regulating Long-Term Care Quality: An International Comparison*. Cambridge University Press. 2014: 211-239.
24. Kim H, et al. Reliability of the interRAI long term care facilities (LTCF) and interRAI home care (HC). *Geriatrics & gerontology international*. 2015; 15(2): 220-228.
25. Hjaltadóttir I, et al., Quality of care in Icelandic nursing homes measured with Minimum Data Set quality indicators: retrospective analysis of nursing home data over 7 years. *International journal of nursing studies*. 2012; 49(11): p. 1342-1353.
26. Carpenter I, Hirdes JP. Using interRAI assessment systems to measure and maintain quality of long-term care. In: *A good life in old age*. OECD Publishing, Paris; 2013: 93-139.
27. Smith P. Developing composite indicators for assessing health system efficiency. In: *Measuring up: improving health system performance in OECD countries*. OECD Publishing, Paris; 2002: 295-318.
28. OECD. *Monitoring and Improving the Quality of Long-term Care*. In: *Long-term Care for Older People*. The OECD Health Project. OECD Publishing, Paris; 2005:
29. Dandi R, Casanova G. *Quality Assurance Indicators of Long-Term Care in European Countries*. ENEPRI Research Report No. 110; 2012.
30. García-Gómez P, et al. Inequity in long-term care use and unmet need: two sides of the same coin. *Journal of health economics*. 2015; 39: 147-158.
31. Hosseinpoor AR, et al. Equity-oriented monitoring in the context of universal health coverage. *PLoS medicine*, 2014. 11(9): e1001727.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

32. Khan JA, et al. Benefit incidence analysis of healthcare in Bangladesh—equity matters for universal health coverage. *Health policy and planning*. 2016; 32(3): 359-365.
33. Kim C, et al. An equity analysis of utilization of health services in Afghanistan using a national household survey. *BMC Public Health*. 2016; 16(1): 1226.
34. Gonzalez C, Ngoc DD. Equity-focused systematic review of Viet Nam’s One Plan (2012-2016). 2014: VietNam.
35. Rodrigues R, Ilinca S, Schmidt A. Analysing equity in the use of long-term care in Europe. European Centre for Social Welfare Policy and Research; 2014.
36. Hsu J, et al. Measuring financial protection against catastrophic health expenditures: methodological challenges for global monitoring. *International journal for equity in health*. 2018; 17(1): 69.
37. Campbell JC, Ikegami N, Gibson MJ. Lessons from public long-term care insurance in Germany and Japan. *Health Affairs*. 2010; 29(1): 87-95.
38. Islam MR, et al. Inequalities in financial risk protection in Bangladesh: an assessment of universal health coverage. *International journal for equity in health*. 2017; 16(1): 59.
39. Saksena P, Hsu J, Evans DB. Financial risk protection and universal health coverage: evidence and measurement challenges. *PLoS medicine*. 2014; 11(9): e1001701.
40. Colombo, F., et al. Help wanted? Providing and paying for long - term care. *OECD Health Policy Studies*. OECD Publishing, Paris; 2011.
41. Lloyd-Sherlock P. Formal social protection for older people in developing countries: three different approaches. *Journal of Social Policy*. 2002; 31(4): 695-713.
42. Scheil - Adlung X, Bonan J. Gaps in social protection for health care and long - term care in Europe: Are the elderly faced with financial ruin? *International Social Security Review* 2013; 66(1): 25-48.
43. Knaul FM, et al. The quest for universal health coverage: achieving social protection for all in Mexico. *The Lancet*. 2012; 380(9849): 1259-1279.
44. Muir T. Measuring social protection for long-term care. *OECD Health Working Papers*, No. 93. OECD Publishing, Paris; 2017.
45. Ramírez M, Angulo R, Walsh S. Review of social policy (2005-2010) and draft policy note (2010-2015). *ESD International consulting*; 2010.
46. Pourmalek F, Abolhassani F, Naghavi MO, Mohammad KA, Majdzadeh R, Holakouie K, Fotouhi A. Estimation of healthy life expectancy for Iran’s population in year 1382 (2003). *Hakim Research Journal*. 2008; 10(4): 66-76.

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

47. Kyu HH, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N, Abbastabar H, Abd-Allah F, Abdela J, Abdelalim A, Abdollahpour I. Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2018; 392(10159): 1859-922.
48. Movahed M, Jahanbazian S, Abbasi Shavazi MT. The study of self-assessed health among elderly women in shiraz and Yasuj cities. *Elderly Health Journal*. 2016; 2(1): 27-32.
49. Sadat SD, Afrasiabifar A, Mobaraki S, Fararoei M, Mohammadhossini S, Salari M. Health status of the elderly people of Yasouj, Iran, 2008. *Armaghane danesh*. 2012; 16(6): 567-77.
50. Cochrane G, et al. Understanding community-based social innovations for healthy ageing. Appendix C , Iran’s case study. World Health Organization, Geneva; 2018.
51. OECD/WHO/World Bank Group Delivering quality health services: a global imperative for universal health coverage. World Health Organization, Geneva; 2018.

Appendix 1: PubMed search strategies

Table 1: Search strategy 1

set	Search Strategy 1
#1	Search (((("Universal healthcare coverage"[Title/Abstract]) OR "Universal health care coverage"[Title/Abstract]) OR "Universal health coverage"[Title/Abstract]) OR "UHC"[Title/Abstract])
#2	Search ((((((("elderly care"[Title/Abstract]) OR "Ageing care"[Title/Abstract]) OR "long-term care"[Title/Abstract]) OR "Integrated care"[Title/Abstract]) OR "person centred care"[Title/Abstract]) OR "Patient focused care"[Title/Abstract]) OR "elderly friendly UHC"[Title/Abstract])
#3	Search (((("financial protection"[Title/Abstract]) OR "long-term care insurance"[Title/Abstract]) OR "affordability"[Title/Abstract]) OR "catastrophic costs"[Title/Abstract])
#4	Search ("Essential service"[Title/Abstract]) OR "benefit package"[Title/Abstract]
#5	Search (((("indicator"[Title/Abstract]) OR "measuring"[Title/Abstract]) OR "measuring indicator"[Title/Abstract]) OR "Monitoring"[Title/Abstract]) OR "measuring framework"[Title/Abstract])
#6	#1 AND #2 AND #3 AND #4 AND #5
#7	#1 AND #2
#8	#1 AND #5
#9	#5 AND #2
#10	#1 AND #4
#11	#1 AND #3
#12	#3 AND #2
#13	#4 AND #2

Table 2: Search strategy 2

set	Search Strategy 2
#1	Search ((((((("elderly care"[Title/Abstract]) OR "Ageing care"[Title/Abstract]) OR "long-term care"[Title/Abstract]) OR "Integrated care"[Title/Abstract]) OR "person centred care"[Title/Abstract]) OR "Patient focused care"[Title/Abstract])
#2	Search ("Quality"[Title/Abstract]) OR "equity"[Title/Abstract]) OR "access"[Title/Abstract]

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

#3	Search ("social protection"[Title/Abstract]) OR "financial equity"[Title/Abstract]
#4	Search (((("indicator"[Title/Abstract]) OR "measuring"[Title/Abstract]) OR "measuring indicator"[Title/Abstract]) OR "Monitoring"[Title/Abstract]) OR "measuring framework"[Title/Abstract]
#5	#1 AND #2 AND #3 AND #4
#6	#1 AND #2 AND #4
#7	#1 AND #3 AND #4
#8	#1 AND #2
#9	#1 AND #3

Appendix 2: Discussion Guides

Discussion guide A: Examining the feasibility of UHC measuring frameworks regarding health system responses to ageing in LMICs

The topic guide below represents a series of questions aimed at addressing the dimensions specified in the framework underpinning this research.

*The questions will be asked within an expert panel review, and facilitators will be trained in order for the questions to be phrased in the most appropriate way, according to the **panel participants** and in relation to the **study objectives**.*

All the questions are presented in English, but will be adapted and translated into respective local languages.

Welcome and introduction

A welcome note will be presented by principle investigators followed by an introduction to research which elaborates the research objectives and primary findings. Moreover, the facilitator, who is a qualitative research expert, will explain about the confidentiality process and will remind everyone that the session is audio recorded.

Topic guide for Panel 1: Quality of care and healthy ageing measures

Healthy ageing measures

1-1 Are the following indicators currently measured in the health system of the country?

Healthy life years

Share of the population aged over 65 and over 80 years

Trends in the share of the population aged over 80 years

Life expectancy at age 65

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

Life expectancy at age 65 by sex

Perceived health status in adults aged 65 years and over

Perceived health status in adults aged 65 years and over by income quintile

1-2 Which organization(s)/office(s) is responsible for gathering data?

1-3 Are there specific surveys to gather data on these indicators?

Prompt: Frequency and scope of reporting (e.g. national or subnational/annually or biannually)

1-4 Is there any other measure available in the country related to healthy ageing?

Prompt: How useful are these indicators at measuring health system responses to ageing?

1-5 What other measures would you suggest to be monitored for healthy ageing?

Prompt: Are these indicators actually measurable? For what purposes should these indicators be measured?

1-6 What resources are needed in the future to monitor and report these indicators (e.g. health information requirement)?

Quality of long-term care for older persons:

2-1 Which organization(s)/office(s) is responsible for monitoring the quality of long-term care provided for older persons? (The care might be provided by the Ministry of Health, Welfare Organization, private nursing homes, family care, etc.)

2-2 Which tool is used to assess the quality of care (e.g. interRAI for long-term care/home care)?

2-3 What procedures are available for ensuring the quality of care in long-term care settings?

2-4 How many times are providers monitored for quality in a year?

2-5 The themes and indicators below are gathered through literature review. Which ones are currently monitored?

Cognition/mental health

Incidence of depression

Prevalence of anti-psychotic drug use

Dementia prevalence

Clinical issues

Number of falls

Incidence of nosocomial infections

Unplanned weight gains or loss

Prevalence of pressure ulcers

Incidence of over medication and medication errors.

Faecal incontinence

Prevalence of malnutrition

Residents with poorly managed pain

Functional performance/status

Incidence of use of physical restraint

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

Preventable decline of ADL and IADL functioning

Psycho-social aspects

Social engagement and privacy protection

Structure of care

Quality and safety of buildings (e.g. fire hazards, sanitation)

Amenities of the housing environment

Size of rooms

Staff ratios; mix of staff qualification

Patient-centeredness:

Mechanisms to protect resident rights

Procedures of resident assessments used for care planning

Continuity and coordination of care:

Well-functioning transfer and discharge management

Requirements for clinical records and process of care documentation

Maintaining a quality assurance committee

Well-balanced diet

Patient Safety

End of life/palliative care

2-6 What other indicators are monitored in the country for quality assurance of long-term care?

Prompt: How useful are these indicators at measuring health system responses to ageing?

Discussion guide B: Examining the feasibility of UHC measuring frameworks regarding health system responses to ageing in LMICs

The topic guide below represents a series of questions aimed at addressing the dimensions specified in the framework underpinning this research.

*The questions will be asked within an expert panel review, and facilitators will be trained in order for the questions to be phrased in the most appropriate way, according to the **panel participants** and in relation to the **study objectives**.*

All of the questions are presented in English, but will be adapted and translated into respective local languages.

Welcome and introduction

A welcome note will be presented by the principle investigators, followed by an introduction to research including a description about the research objectives and primary findings. Moreover, the facilitator, who is a qualitative research expert, will explain about the confidentiality process and will remind everyone that the session is audio recorded.

Topic guide for Panel 2: Financial protection mechanisms and Coverage of long term care

Financial protection

1-1 Expenditure pattern

1-1-1 Are the following indicators currently measured in health system of the country?

Public spending for older persons (percentage of health budget)

Public long-term care spending for the older persons (percentage of GDP)

Long-term care expenditure (health and social components) by government and compulsory insurance schemes, as a share of GDP

Annual growth rate in expenditure on long-term care (health and social) by government and compulsory insurance schemes, in real terms

Government and compulsory insurance spending on long-term care (health) by mode of provision

Percentage of private long-term care expenditure

Percentage of older persons covered by long-term care insurance

1-1-2 Which organization(s)/office(s) is responsible for gathering data?

1-1-3 Are there specific surveys to gather the data on these indicators?

1-1-4 What other indicators are available in the country to monitor the spending on long-term care at the national level?

Prompt: How useful are these indicators to measure health system responses to ageing?

1-1-5 What measures do you recommend to observe for monitoring long-term care spending?

Prompt: Are these indicators actually measurable? For what purposes should these indicators be measured?

1-1-6 What resources and requirement are necessary to implement these measures as part of health system responses to ageing (e.g. national health accounts, hospital information systems)?

1-1-7 Would you please explain about the financing mechanisms of long-term care (health care and social) for older persons in general?

1-2 Financial protection

1-2-1 Are the following indicators currently measured in the health system of the country?

Out-of-pocket health expenditure by household as a proportion of total income (%)

Out-of-pocket health expenditure by household as a proportion of disposable income (%)

Percentage of older households with out-of-pocket expenditure on health care

Health-related out-of-pocket expenditure as a percentage of older household gross income by different items

Incidence of catastrophic health expenditure (proportion of households in a population who face catastrophic health expenditure)

Incidence of impoverishment (proportion of households in a population who fell into poverty due to health spending)

Compensating for the opportunity cost of providing informal care (informal care compensation rate)

1-2-2 Which organization(s)/office(s) is responsible for gathering data?

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

1-2-3 Are there specific surveys to gather data on these indicators?

1-2-4 What mechanisms are available to financially protect older persons against e health risks (e.g. health safety nets, co-payment mechanisms)?

1-2-5 What mechanism do you suggest would be applicable in the future to promote financial protection in this group?

1-2-6 What resources or requirements are needed to implement financial protection schemes in the country (e.g. financial resources, infrastructure, linkage with broader national budgeting system)?

1-2-7 What other indicators are available in the country to monitor the financial protection level for older persons?

Prompt: How useful are these indicators at measuring health system responses to ageing?

1-2-8 What resources and requirements are necessary to implement these measurements as part of health system responses to ageing (e.g. national health accounts, hospital information systems)?

1-3 Social protection

1-3-1 What mechanism are available for the social protection of older persons (e.g. subsidies/cash transfers, social housing)?

1-3-2 Which organizations are involved in providing such mechanisms to older persons?

1-3-3 Are there specific offices or surveys to gather data on these indicators?

1-3-4 Are the below programs available and measured in the country?

Proportional amount of cash transfers to every poor household to meet the equivalent poverty line

Percentage of public benefits to the population 65 years old and over

Increased percent coverage of family counselling on older person's home care provided through social workers and health care specialists

Increase counselling and advising services within day-care institutions specialized for older persons living independently

Increased coverage of social housing programs among older persons as a percentage of independent older persons benefiting from home improvements or social housing programs

1-3-5 What other measures do you believe could be measured in order to monitor social protection in this vulnerable group?

Prompt: Are these indicators actually measurable? For what purposes should these indicators be measured?

Access to long-term care for older persons:

Note: Long-term care is provided at the home, community and institutional level

2-1 Are the following indicators measured in the country?

Proportion of people aged 65 and over receiving long-term care

Share of long-term care recipients, by age

Findings, conclusions and implications should not be interpreted as endorsed by WHO.

Share of long-term care recipients aged 65 years and over receiving care at home
Increased geographic coverage of day care centres for older persons
Long-term care workers per 100 people aged 65 and over
Long term care workers per population aged 80 and over
Long-term care beds in institutions and hospitals
Trends in long-term care beds in institutions and hospitals
Increase in the number of district health care centres for older person (%)
Older persons having access to community-based health care (%)

2-2 Which organizations are responsible for providing long-term care to older persons?

2-3 What kind of providers are available in the country to provide such services (e.g. NGOs, private/public bodies)?

2-4 What are the eligibility criteria for older persons to have access to public long-term care services?

2-5 What services are generally available as long-term care to older persons (health and social care such as medical care, ADL, and IADL).

2-6 What strategies do you suggest would be applicable in the future to promote access to long-term care?

2-7 What resources or requirements are needed to promote the coverage level of long-term care as the population is ageing (e.g. resource for training long-term care workers, establishing long-term care centres, promoting home care)?

2-8 What other indicators are available in the country to monitor the coverage level of long-term care for older persons (e.g. level of informal care)?

2-9 What measures do you recommend to be observed for monitoring access to long-term care?

Prompt: Are these indicators actually measurable? For what purposes should these indicators be measured?

2-10 Are the utilization rates of long-term care measured in the country?

2-11 What mechanisms are needed to measure the level of informal care? Are there any specific surveys? Are these types of care measurable by secondary data?