



# Policy package for preventing overuse and underuse of health care services in the Iranian health care system: A study protocol

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## Abstract

**Background:** Overuse and underuse of health care services are progressively recognized in all health systems around the world. There is evidence of overuse and underuse of health care services in Iran. In this study, it was aimed to summarize the evidence of overuse and underuse of health care services in the Iranian health care system.

**Methods:** This study will be conducted in 5 steps using a sequential explanatory multimethod design, literature review, systematic review, qualitative interview, expert panel, and policy Delphi method. This study was approved by Tabriz University of Medical Sciences (ethical confirmation number: IR.TBZMED.REC.1396.908).

**Conclusion:** There is a strong evidence of worldwide overuse and underuse of health care services. Designing context-based prevention strategies by conducting comprehensive and systematic studies will improve the appropriate use of routine services and help patients, physicians, and providers make evidence-based decisions.

**Keywords:** Medical overuse, Underuse, Health care services, Policy package, Iran

**Conflicts of Interest:** None declared

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## Introduction

The World Health Organization recognizes health as a right for all people in the world (1). Since providing health care services is one of the main responsibilities of governments (2), they have done great deal of planning and reforms to improve the health of individuals and communities. However, given the limited availability of resources and unlimited demand, they have not achieved the desired outcomes in many cases and have not been able to attain the desired health status (3).

According to studies conducted on health systems around the world, one of the most important reasons for

not reaching the desired level was the lack of proper use of resources (4-7), with overuse being one of the most important reasons. Overuse contradicts the balance between resources and demand. Elshaug et al defined overuse as “provision of a service that is unlikely to increase the quality or quantity of life, that poses more harm than benefit, or that patients who were fully informed of its potential benefits and harms would not have wanted.” (8). When we waste resources, we are faced with a lack of resources elsewhere and fail to provide an essential service (9). Failure to provide an essential service or un-

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### ↑What is “already known” in this topic:

There is no comprehensive study about the medical overuse and underuse in the Iranian health care system. Existing studies have examined the overuse and/or underuse for specific services and have not systematically addressed this issue.

### →What this article adds:

In this study, different types of overuse and underuse will be identified in the Iranian health care system. In addition, the drivers and the ways to prevent overuse and underuse will also be investigated.

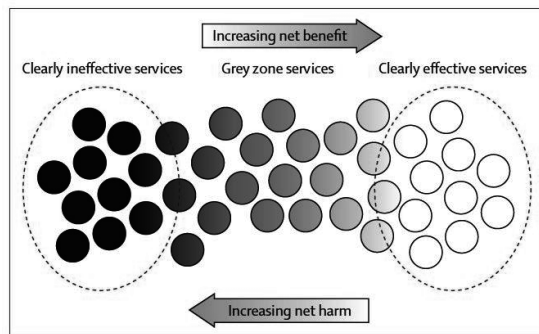


Fig. 1. Grey zone services, adapted from Brownlee et al. (2017)

deruse is defined as “failure to deliver a service that is highly likely to improve the quality or quantity of life, that represents good value for money, and that patients who were fully informed of its potential benefits and harms would have wanted.” (8).

These 2 terms (overuse and underuse) can be better explained in a conceptual way called the grey zone (Fig. 1). In this case, the services can be considered as a continuum, with services that are clearly effective on one side of the continuum and services that are clearly ineffective on the other side of the continuum. We have good knowledge of both sides of the continuum, but there is not enough information about the middle region called the grey area (10).

The services of this area have a number of features, including services with low benefit to all patients, services that balance between benefits and harms that vary substantially among patients, and little evidence of benefits and harms of many services provided by the health care system. Deciding on the services of this area is usually confusing because it is not possible to make a conclusive decision (8-11).

According to available evidence, many countries in the world are suffering from overuse and underuse of health care services (10-15) and are looking for solutions to establish a balance between the 2 concepts. This is a problem in both developing and developed countries (8). For example, according to conservative assumptions, spending on overuse varies widely in the U.S, ranging from 6% to 8%, and even some studies have estimated this share to be 29%. This share can be as high as 89% in certain populations (10). Evidence shows high rates of overuse and underuse in Canada, Australia, Spain, Brazil, South Korea, and Iran (7-11).

Also, the evidence suggests that there are signs of overuse and underuse of health care services in Iranian health system. Several studies in Iran have been scrutinizing the cases of overuse and underuse. These include unnecessary cesarean, excessive use of antibiotics, unnecessary use of magnetic resonance imaging, computed tomography, duplex sonography, and laboratory test (16-20).

Iranian health care system is categorized as a public co-operative system. In Iran, the Ministry of Health and Medical Education (MOHME) is responsible for stewardship in health system at macro level and medical universities are representatives of MOHME at micro level. The struc-

ture of Iranian health system has 3 levels: national, province, and district. At the district level, health care system has been delegated to health care networks that provides primary, secondary, and tertiary health services (21).

Considering the limitations in Iran's health system budget and the need to use safe and cost-effective services, the need to identify right care and services is felt more than ever. By identifying and preventing unnecessary services, resources can be arranged to make a better balance in providing services without imposing additional costs and can increase the quality of service, reduce costs, and increase the satisfaction of patients and providers (9, 13).

This study is important for several reasons: alignment with upstream documents and macro politics, such as general health policies communicated by the supreme leader; health sector evolution plan; laws of targeting health subsidies; consumption pattern reform policies; universal health coverage; and sustainable development goals.

Given the above, and the emphasis of the Ministry of Health and Medical Education on reduction of unnecessary services, it is highly essential to conduct a codified study to identify the overuse and underuse of health care services.

Therefore, the main objectives are to identify overuse and underuse of health care services and formulate a policy package to prevent overuse and underuse of health care services in the Iranian health care system. A policy package is a set of policies that combines 2 or more strategies into 1 package. In this case, the policy packages consist of preventive strategies for medical overuse and underuse in the Iranian health care system.

## Methods

To achieve these goals, this multimethod study will be done in 5 steps:

1. Conducting a primary literature review to identify existing definitions, frameworks (theoretical, conceptual, practical), characteristics, drivers, leverages, and potential preventive ways to overuse and underuse health care services in the world
2. Conducting a systematic review to identify reported services that are example of overuse and underuse in the Iranian health care system and categorize them
3. Conducting a qualitative study to determine the views of experts on drivers, levers, effective factors, and strategies to prevent the provision of overuse and underuse of services in the Iranian health care system
4. Extracting preventive ways through 3 first goals (literature review, systematic review, qualitative study) and formulate an initial policy package draft to prevent overuse and underuse in the Iranian healthcare system.
5. Validation and finalization of the initial policy package through a policy Delphi method

## Literature review

Performing a literature review is an essential step in research (22). A review of the literature makes the researchers aware of the available knowledge and reveals the am-

biguous points of a research (23). Conducting a literature review summarizes the primary studies, generates a comprehensive interpretation, and provides a more solid foundations of research, and develop a deeper understanding of the subject of the research (22). This type of review can help the researcher identify the gap between existing knowledge and find new ideas and can also create new questions/assumptions (22).

In this review, 3 phases were followed based on Brereton et al (2007) (24). This framework was used because it describes all phases of the process and, on the other hand, fits into research in the field of health policy (Fig. 2).

Phase 1: This step has already been done. The topic in this review is the overuse and underuse of health care services and the objective is to identify existing definitions, frameworks (theoretical, conceptual, practical), characteristics, drivers, leverages, and potential preventive ways to overuse and underuse health care services in the world. The main question was as follows:

What are the potential ways of preventing overuse and underuse of health care services?

Phase 2: In this phase, the related databases, specific journals, and specialized websites in this area are searched (Table 1).

In this phase, studies that examined issues related to features, theoretical, conceptual and practical frameworks, drivers, policy levers, and preventive ways to provide overuse and underuse of health care services will be included.

The quality of included studies will be assessed with Critical Appraisal Skills Programme checklist (25). This set of 8 critical appraisal tools are designed to be used when reading a research study. After the data are extracted, the results will be synthesized.

Phase 3: At the last phase, the results of the review are documented and written as a review article and will be

submitted to a credible journal.

### Systematic review

A systematic review will be conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) (26).

In this step, (1) systematical review is conducted and the literature on the overuse and underuse of medical services is identified; (2) the areas (medication, tests, procedures) in which the overuse and underuse of medical services is also identified; and (3) the rate of overuse and underuse of medical services is determined in the Iranian health care system.

The review protocol has already been registered in PROSPERO (registration number: CRD42017075481 (27)) and published in BMJ Open (28).

PubMed, Embase, Scopus, Web of Science, Cochrane, and SID databases will be searched using an inclusive search strategy to identify studies on overuse and underuse of health care services by the end of 2017, followed by reference tracking, author tracking, and expert consultation.

The proposed search strategy for Embase database will be as follows: ('medical overuse' [mesh term], OR 'overuse':ab,ti OR 'underuse':ab,ti OR 'overmedicalization':ab,ti OR 'overtreatment':ab,ti OR 'overdiagnosis':ab,ti OR 'inappropriate':ab,ti OR 'unnecessary procedures':ab,ti OR 'overutilization':ab,ti OR 'medicalization':ab,ti OR 'overmedication':ab,ti OR 'misdiagnosis':ab,ti OR 'unwanted':ab,ti OR 'polypharmacy':ab,ti OR 'overprescription':ab,ti OR 'value-based':ab,ti OR 'right':ab,ti) AND 'iran'/exp.

Studies that have addressed overuse and underuse of health care services in the Iranian health care system will be included. The studies will be limited to those published in English and Farsi languages. Furthermore, they will be excluded if their full-text cannot be accessed. However, we will try to obtain the full-texts of the studies by purchasing or contacting the authors.

After completing the search, two independent reviewers will screen the articles based on their title, abstract, and full-text and extract data about type of service, clinical area, and overuse rate. The JBI checklists will be used for quality appraisal of included studies (29). All possible disagreements will be resolved through consultation with the third researcher.

Also, the results of the included studies will be classified based on publication year, clinical area, type of service (diagnostic tests, therapeutic procedures, medications), and range or rate of overuse.

### Qualitative interviews

In this step, semi-structured interviews are used to determine the views and experiences of key informant and experts about drivers, enablers, policy levers, challenges, and preventive ways of overuse and underuse of health care services in Iranian health care system.

Moreover, a purposive sampling approach will be done and will continue until saturation. According to similar studies, the probable sample will be about 20 participants

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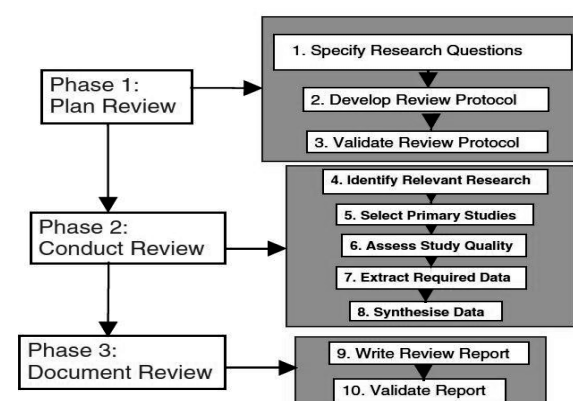


Fig. 2. Literature review process, adapted from Brereton et al (2007)

Table 1. Search resources

Databases	PubMed/Medline
Journals	BMJ, The Lancet, BMC, JAMA
Websites	<a href="http://rightcarealliance.org/">http://rightcarealliance.org/</a> <a href="https://www.england.nhs.uk/rightcare/">https://www.england.nhs.uk/rightcare/</a> <a href="http://www.choosingwisely.org/">http://www.choosingwisely.org/</a> <a href="http://abimfoundation.org/">http://abimfoundation.org/</a> <a href="http://www.who.int/en/">http://www.who.int/en/</a>



(30). Factors, such as study purpose, sampling method, research question, research field, data collection method, financial resources, and time, can be effective in determining the precise sample size. Interviews will be conducted with people who have at least 1 year of work experience in this area, or at least 1 published article, book, or research project in this field.

Before the interview, the time and place of the interview will be coordinated with the participants and informed consent form will be sent along with the details and objectives of the research plan. Participants are allowed to leave the study if they do not want to participate. Interviews will be conducted in accordance with the predefined interview guide.

The interviews will be recorded after obtaining participants' consent. To increase the rigor of the study, the interviews will be transcribed verbatim immediately and will be given to the participants for feedback. Also, purposive sampling will be used to increase transferability. Due to the policy nature of this plan, document reviews will also be used along with the interviews (31-33).

Analysis will be done with framework analysis using MAXQDA software version 12. The framework analysis is a method suitable for analyzing qualitative data- especially for applied policy research. Moreover, framework analysis, introduced by Ritchie et al in 1994, will be used. This method has 5 steps: (1) familiarization, (2) identifying a thematic framework, (3) indexing, (4) charting, and (5) mapping and interpretation (34). After reading the transcribed interviews, the codes will be extracted as the smallest constituent units of sentences and then sub-themes, themes, and categories will be identified.

#### Expert panel

In this step, the researchers will combine the evidence from the previous goals and the primary policy package will be drafted through holding an expert panel. The panel will have 7 to 8 participants, including members of the research team and a few experts in the field of research. Those who will enter the panel that have at least 1 research article or book in this field or have at least 2 years of work experience in this area.

In developing the initial package, some assessment criteria, such as difficulty of implementation (general acceptability, technical and organizational complexity) and performance (cost, time) that have been mentioned in some studies will be considered.

#### Policy Delphi method

The Policy Delphi method is used to validate and finalize the initial policy package. The Policy Delphi method seeks to build a consensus through strongest possible opposing perspective on the possible resolutions of a major policy problem (35, 36). The purpose of this method is to ensure that all possible options are considered to estimate the impact of each particular option and to evaluate the acceptability of each option (37).

This type of Delphi has a variety of scales. We will use 4 voting scales in this study which will include desirability, feasibility, importance, and confidence. The criteria

listed above will be set at the 5-point Likert scale (strongly agree = 5; agree = 4; neither = 3; disagree = 2; strongly disagree = 1). Items with strongly agree and agree scale will be accepted in the first round, items with neither scale will go to the next round, and those with disagree and strongly disagree scale will be excluded. The Delphi round will continue to reach consensus.

Then, the final policy package will be compiled and reported.

This PhD dissertation was approved by the School of Management and Medical Informatics, Tabriz University of Medical Sciences (ethical confirmation number: IR.TBZMED.REC.1396.908).

#### Discussion

This PhD dissertation, for the first time, systematically investigates the overuse and underuse of health care services in the Iranian health care system. It provides important information about the rate of overuse and underuse of health care services and ways to prevent it. Also, it identifies services that are unnecessary and impose additional costs on the health system. The results of this study will inform policymakers, physicians, patients, health care providers, and insurers about services that are most effective for different groups of patients/population. Furthermore, it provides valuable information about preventive ways of overuse and underuse.

The study's findings may be useful in organizing training programs for patients, their families, doctors, and health professionals.

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#### Conflict of Interests

The authors declare that they have no competing interests.

#### References

1. World Health Organization. The right to health—the fact sheet. Geneva, Switzerland: WHO; 2007.
2. Wakeman J, Humphreys J, Wells R, Kuipers P, Entwistle P, Jones J. A systematic review of primary health care delivery models in rural and remote Australia 1993-2006. 2017.
3. Cohen AB, Grogan CM, Horwitt JN. The Many Roads toward Achieving Health Equity. Duke University Press; 2017.
4. Magill SS, Edwards JR, Beldavs ZG, Dumyati G, Janelle SJ, Kainer MA, et al. Prevalence of antimicrobial use in US acute care hospitals, May-September 2011. JAMA. 2014;312(14):1438-46.
5. Squires D, Anderson C. US health care from a global perspective: spending, use of services, prices, and health in 13 countries. The Commonwealth Fund. 2015;15:1-16.
6. Nassery N, Segal JB, Chang E, Bridges JF. Systematic overuse of healthcare services: a conceptual model. Appl Health Econ Health

- Policy. 2015;13(1):1-6.
7. Saini V, Brownlee S, Elshaug AG, Glasziou P, Heath I. Addressing overuse and underuse around the world. *Lancet*. 2017;390(10090):105-7.
  8. Elshaug AG, Rosenthal MB, Lavis JN, Brownlee S, Schmidt H, Nagpal S, et al. Levers for addressing medical underuse and overuse: achieving high-value health care. *Lancet*. 2017.
  9. Saini V, Garcia-Armesto S, Klemperer D, Paris V, Elshaug AG, Brownlee S, et al. Drivers of poor medical care. *Lancet*. 2017.
  10. Brownlee S, Chalkidou K, Doust J, Elshaug AG, Glasziou P, Heath I, et al. Evidence for overuse of medical services around the world. *Lancet*. 2017.
  11. Glasziou P, Straus S, Brownlee S, Trevena L, Dans L, Guyatt G, et al. Evidence for underuse of effective medical services around the world. *Lancet*. 2017.
  12. Mao W, Vu H, Xie Z, Chen W, Tang S. Systematic review on irrational use of medicines in China and Vietnam. *PLoS One*. 2015;10(3):e0117710.
  13. Colla CH, Morden NE, Sequist TD, Schpero WL, Rosenthal MB. Choosing wisely: prevalence and correlates of low-value health care services in the United States. *J Gen Intern Med*. 2015;30(2):221-8.
  14. Baxi SS, Kale M, Keyhani S, Roman BR, Yang A, Derosa AP, et al. Overuse of Health Care Services in the Management of Cancer: A Systematic Review. *Med Care*. 2017;55(7):723-33.
  15. Lipitz-Snyderman A, Bach PB. Overuse of health care services: when less is more... more or less. *JAMA Intern Med*. 2013;173(14):1277-8.
  16. Saadat S, Ghodsi SM, Firouznia K, Etminan M, Goudarzi K, Naieni KH. Overuse or underuse of MRI scanners in private radiology centers in Tehran. *Int J Technol Assess Health Care*. 2008;24(3):277-81.
  17. Askarian M, Morawej AR, Mirkhani H, Namazi S, Weed H. Adherence to American Society of Health-System Pharmacists surgical antibiotic prophylaxis guidelines in Iran. *Infect Control Hosp Epidemiol*. 2006;27(8):876-8.
  18. Hatam N, Askarian M, Moravveji AR, Assadian O. Economic burden of inappropriate antibiotic use for prophylactic purpose in shiraz, iran. *Iran Red Crescent Med J*. 2011;13(4):234.
  19. Badakhsh MH, Seifoddin M. Rise in cesarean section rate over a 30-year period in a public hospital in Tehran, Iran. *Arch Iran Med*. 2012;15(1):4.
  20. Sotoudehmanesh R, Kolahdoozan S, Asgari AA, Dooghaei-Moghaddam M, Ainechi S. Role of Endoscopic Ultrasonography in Prevention of Unnecessary Endoscopic Retrograde Cholangiopancreatography. *J Ultrasound Med*. 2007;26(4):455-60.
  21. Mehrdad RJ. Health system in Iran. *Japan Med Assoc J*. 2009;52(1):69-73.
  22. Keele S. Guidelines for performing systematic literature reviews in software engineering. Technical report, Ver 23 EBSE Technical Report EBSE: sn; 2007.
  23. Matharu GS, Buckley CD. Performing a literature review. *Student BMJ*. 2012;20.
  24. Brereton P, Kitchenham BA, Budgen D, Turner M, Khalil M. Lessons from applying the systematic literature review process within the software engineering domain. *J Syst Softw*. 2007;80(4):571-83.
  25. Critical Appraisal Skills Programme (CASP). Available from: <http://www.casp-uk.net/checklists>.
  26. Moher D, Liberati A, Tetzlaff J, Altman DG, Group P. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*. 2009;6(7):e1000097.
  27. International prospective register of systematic reviews (PROSPERO). Available from: [https://www.crd.york.ac.uk/prospere/display\\_record.php?RecordID=75481](https://www.crd.york.ac.uk/prospere/display_record.php?RecordID=75481).
  28. Arab-Zozani M, Pezeshki MZ, Khodayari-Zarnaq R, Janati A. Medical overuse in the Iranian healthcare system: a systematic review protocol. *BMJ Open*. 2018;8(4).
  29. JBI Critical Appraisal Tools. Available from: <http://joanna-briggs.org/research/critical-appraisal-tools.html>.
  30. Stewart N, Chater N, Brown GD. Decision by sampling. *Cogn Psychol*. 2006;53(1):1-26.
  31. Krefting L. Rigor in qualitative research: The assessment of trustworthiness. *Am J Occup Ther*. 1991;45(3):214-22.
  32. Poland BD. Transcription quality as an aspect of rigor in qualitative research. *Qual Inq*. 1995;1(3):290-310.
  33. Onwuegbuzie AJ, Leech NL. A call for qualitative power analyses. *Qual Quant*. 2007;41(1):105-21.
  34. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. *The qualitative researcher's companion*. 2002;573(2002):305-29.
  35. Turoff M. The design of a policy Delphi. *Technol Forecast Soc Change*. 1970;2(2):149-71.
  36. Hsu CC, Sandford BA. The Delphi technique: making sense of consensus. *PARE*. 2007;12(10):1-8.
  37. Rayens MK, Hahn EJ. Building consensus using the policy Delphi method. *Policy Polit Nurs Pract*. 2000;1(4):308-15.