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Corso di dottorato di ricerca in:

Alimenti e Salute Umana

Ciclo 32°

Titolo della tesi

Definition and evaluation of Good Practices in Public Health

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Anno 2019

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RIASSUNTO

Presupposti dello studio

Nonostante le buone pratiche siano strumenti di sempre maggior utilizzo in determinati contesti, manca in letteratura una definizione di buona pratica per la Sanità Pubblica, soprattutto per la difficoltà di conciliare l'efficacia pratica (*effectiveness*) e la praticabilità operativa nei diversi contesti con la tradizionale gerarchia delle evidenze scientifiche; la mancanza di una definizione condivisa e del conseguente inserimento a pieno titolo negli strumenti riconosciuti dalla comunità scientifica e professionale, comporta la difficoltà nel classificare e diffondere esperienze di successo che possono essere considerate "buone pratiche" potenzialmente esportabili in altri contesti, ostacolando perciò l'armonizzazione degli approcci alle diverse problematiche e potenzialmente delle performance.

Scopo dello studio

- Realizzare una revisione della letteratura sulle esperienze e definizioni di buona pratica in Sanità Pubblica che identifichi i concetti maggiormente ricorrenti nei lavori scientifici, che consenta di sviluppare una definizione di buona pratica in Sanità Pubblica;
- Sviluppare uno strumento per la classificazione e la valutazione delle buone pratiche in Sanità Pubblica;
- Sviluppare un set di raccomandazioni per la pianificazione, implementazione e autovalutazione delle buone pratiche in Sanità Pubblica, compendio allo strumento per facilitare l'ideazione di buone pratiche considerando i fattori che ne ostacolano o favoriscono l'implementazione e la diffusione;
- Testare sul campo lo strumento raccogliendo una serie di buone pratiche, valutando la versatilità dello strumento nella classificazione di buone pratiche realizzate a diversi livelli l'affidabilità per realtà differenti a livello (locale, regionale e nazionale), indispensabile per testare la reale efficacia pratica dello strumento nel rappresentare le diverse realtà ed esperienze e la sua capacità di essere consultato;

Metodi

La definizione di buona pratica è stata sviluppata attraverso una revisione sistematica della letteratura e una ricerca separata attraverso portali istituzionali con collezioni di buone pratiche nonché progetti europei / Joint Actions.

Utilizzando i dati della revisione sistematica, sono stati identificati 14 *framework* con criteri di valutazione delle buone pratiche. Tutti i criteri di diversi quadri sono stati raggruppati in aree tematiche (dimensioni) precedentemente identificate.

Il sistema di punteggio è stato sviluppato ponderando ogni dimensione con il numero di citazioni all'interno della revisione sistematica.

Risultati

Sono stati vagliati un totale di 9378 abstract, di questi 339 lavori sono stati valutati *full-text* e un numero definitivo di 74 manoscritti è stato incluso nella revisione finale; tutti le caratteristiche di buona pratica sono state raggruppate in cinque dimensioni principali: efficacia, sostenibilità, replicabilità, portata e contesto.

Lo strumento FIRST (acronimo di *Frame, Impact, Resources, Spread e Target*) è stato sviluppato da 14 *framework* selezionati includendo un totale di 122 criteri, raggruppati in fasi *plan, do, check, act*. in base al ciclo di miglioramento della qualità.

Durante il test sul campo dello strumento FISRT, 340 buone pratiche sono state selezionate casualmente da tre portali web e valutate utilizzando lo strumento FIRST: 129 buone pratiche nazionali, 62 GP regionali, 61 locali e 88 GP di singoli ospedali.

Conclusioni

Lo studio ha prodotto una definizione di buona pratica basata su cinque dimensioni costruite dalle evidenze disponibili in letteratura, comprese le più recenti esperienze di Joint Action europea.

Lo strumento FIRST è stato sviluppato utilizzando i *framework* disponibili in letteratura, e rappresenta il primo strumento di valutazione e autovalutazione per le buone pratiche.

Lo strumento FIRST si è dimostrato efficace nel fornire una fotografia delle buone pratiche disponibili nei diversi setting, descrivendo le dimensioni più solide e quelle con le maggiori opportunità di miglioramento, rivelandosi al contempo flessibile, sebbene più adatto per interventi a scala maggiore rispetto esperienze locali più piccole.

ABSTRACT

Background

Despite the increasing use of the good practices tool in health care organizations, there is no commonly accepted definition of good practice in public health in literature, especially for the difficulty of reconciling effectiveness and operational feasibility with the traditional hierarchy of scientific evidence; the lack of a formal definition and the difficulty in finding a suitable spot in the scientific literature often undermine the possibilities for classifying and spreading successful experiences that can be considered "good practices", hindering the harmonization of approaches towards different problems.

Aim of the study

- making a systematic review of the literature on good practice definitions and experiences in Public Health, identifying the most recurrent concepts and problems in scientific papers, thus developing a definition of good practice in Public Health;
- developing a tool for classification and evaluation of good practices in Public Health;
- developing a set of recommendations for planning, implementation and self-evaluation of Public Health good practices, to facilitate the design of good practice considering the factors that prevent or promote implementation and dissemination;
- field-testing the tool picking up a set of available good practices, evaluating the tool versatility in good practices classification for different realities (local, regional and national) and its ability to be consulted with ease;

Methods

Good practice definition has been developed using a systematic review of the available literature and a separate search through institutional websites and portals for good practices collections and European projects/Joint Actions.

Using data from systematic review, 14 frameworks with good practice evaluation criteria were identified. All criteria from different frameworks were grouped into previously identified thematic areas (dimension).

Scoring system was developed weighting each dimension with the number of citations inside the original systematic review.

Results

A total of 9378 abstracts were screened, 339 records were assessed with full-text and a definitive number of 74 records were included in the final review; all good practice concepts were grouped into five main dimensions: Effectiveness, Sustainability, Replicability, Reach and Context.

FIRST tool (acronym for Frame, Impact, Resources, Spread and Target) was developed from 14 selected frameworks included a total of 122 criteria, grouped into Plan phase, Do phase, Check phase and Act phase, according to the quality improvement circle.

During FISRT tool field testing, 340 good practices were randomly selected from three web-based portals and assessed using FIRST tool: 129 national good practices, 62 regional, 61 local and 88 single hospital good practices.

Conclusion

The study produced a definition of good practice built on five domains based on the evidence available in literature, including frameworks from the most recent European Joint Action experiences.

The FIRST tool was developed using frameworks available in literature, representing the first evaluation and self-evaluation tool for good practices.

The FIRST tool was effective in providing a picture of different good practices settings, describing stronger dimensions and improvement opportunities, while setting stratification proved the tool flexible, although more suitable for widespread interventions than little, more local, experiences.

1.BACKGROUND

In the last decade, considerable efforts have been devoted in Europe to policies and programs standardization to facilitate and promote cross-border, transnational and interregional cooperation, aiming for strengthening economic and social cohesion (1); reduction of excessive behavior variability, performance measurement and reduction of performance differences in health care organizations are also basic concepts of quality systems and cornerstones of the continuous improvement cycle (2).

Programs funded by European Union (EU) like PHIRE (Public Health Innovation and Research in Europe), ROAMER (Road Map for Mental Health Research in Europe) as well as MAPPING_NCD (Mapping European research on non-communicable diseases), had as primary goal to identify potential overlaps and opportunities for collaboration within Europe and to contribute to the development of evidence-based policies.

At the same time Joint Actions like CHRODIS (Joint Action on Chronic Diseases), RARHA (Joint Action on Reducing Alcohol Related Harm), or PASQ (European Union Network for Patient Safety and Quality of Care) are other European scaled projects funded by EU with the purpose of harmonization and network developing collaboration.

Despite these institutional efforts, there are still significant dissimilarities in the way healthcare professionals from different European countries manage Public Health topics.

Given that guidelines in healthcare field are built using evidence based medicine principles, the most rational approach to standardization and harmonization should be using evidence based practices; unfortunately, this traditional approach is hard to adapt for Public Health field, were practitioners struggle to implement practices that were designed by researchers that often cannot take completely into account the complex environment in which those interventions will be used.

Evidence Based Public Health, in fact, relies upon epidemiological rigor and strong quality of evidence rarely available outside an experimental environment (3).

Consequently, a major obstacle for healthcare practitioners is represented by the lack of evidence on how interventions and programs perform when implemented in real life, as evidence based interventions are often undermined by the fact of being designed to achieve evidence of positive effect alone rather than be proven effective at practical level (3)

This led to an opposite approach to the problem, where practitioners, patients and communities are engaged in participatory research and evaluation conducted in practice settings, generating practice based evidence. (4)

Nevertheless, although in some cases practice based evidence is generated, suggesting what should be done, the specific literature is usually limited to single successful experiences, with little or no diffusion, that are proven effective in a singular setting but are lacking evidence for a possible replication in others; practitioners not always have access to these single experiences, losing their potential usefulness in other contexts or worse, even when evidence is promptly available, implementation is an insurmountable obstacle, given the difficulty of translating scientific evidence into real practical programs (5).

Traditional evidence hierarchy used for evidence based guidelines, in fact, is lead by the excellence of systematic reviews and multi-centre studies while single successful experiences are usually classified as fair or poor evidence sources.

In this scenario, there is a growing call for so called *good practices* as a way to collect and share successful exportable experiences.

Although the term *good practice* is being progressively more used in Public Health, there is not currently a shared definition of it, which demonstrates the urgent need for a common vocabulary among professionals of all countries, in order to communicate, compare experiences and improve performance through a systemic approach in a context of increasing Public Health globalization (6). Consequently, the specific literature is rather thin, usually limited to single successful experiences, with little or no diffusion, that are proven effective in a particular context but are lacking a strong scientific evidence for a possible replication in other realities.

Despite these difficulties, there are some attempts at a European level (supported by the institutions) to define a good/best practice and collect experiences proven effective on particular Public Health problems or areas (e.g. the aforementioned PASQ, or the European Commission Public Health Best Practice Portal); this sectorial method, somehow unavoidable given the vastness and the variability of health problems in population, partly limits experiences dissemination and prevents the systemic approach needed in Public Health.

At the same time, standardization and harmonization require measurement and self-evaluation as key elements for quality improvement (7, 8), as is demonstrated by two successful examples of self-evaluation frameworks at international level like WHO's Hand

Hygiene Self-Assessment Framework (9) and French Government's ICALIN (Indicateur Composite des Activités de Lutte contre les INfections) (10).

A framework of criteria to evaluate good practices may allow organizations to analyze and monitor their performance over time, may promote benchmarking activities, may foster exchange of best practices and also support the transparent flow of information on system evolution to the involved stakeholders (11,12).

In this context, a tool based on a literature-based definition of good practice in Public Health designed for classification and evaluation of good practices in Public Health would be able to help standardization and dissemination of successful experiences, performance improvement and reduction of the gap that now separates scientific research and operational reality.

2.AIMS OF THE STUDY

- making a systematic review of the literature on good practice definitions and experiences in Public Health, identifying the most recurrent concepts and problems in scientific papers, thus developing a definition of good practice in Public Health;
- using the systematic review to develop a tool for classification and evaluation of good practices (GPs) in Public Health;
- using the systematic review to develop a set of recommendations for planning, implementation and self-evaluation of Public Health good practices, to facilitate the design of good practice considering the factors that prevent or promote implementation and dissemination;
- field-testing the tool picking up a set of available good practices, evaluating the tool versatility in good practices classification for different realities (local, regional and national) and its ability to be consulted with ease;

3.1 LITERATURE REVIEW METHODS

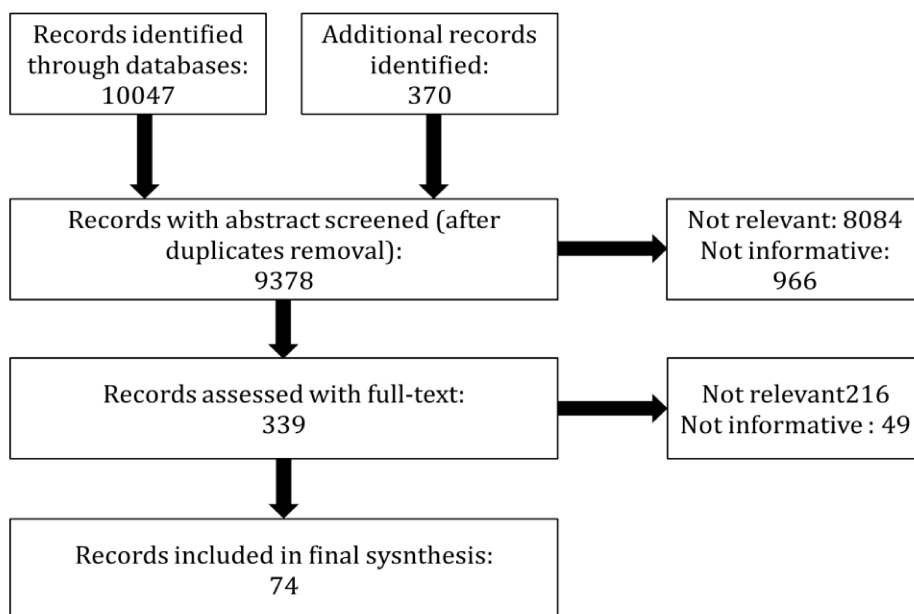
Literature search was carried out by a single researcher from April to September 2017, using two different approaches. A systematic review of literature through MEDLINE and EMBASE databases was performed using a broad search key: ("public health"[All Fields]) AND ("appraisal"[All Fields] OR "assessment"[All Fields] OR "evaluation"[All Fields]) AND ("intervention"[All Fields] OR "strategy"[All Fields] OR "program"[All Fields] OR "practice"[All Fields] OR "plan"[All Fields]) AND ("tool"[All Fields] OR "framework"[All Fields]). A separate search through institutional websites and portals was carried out for good practices collections and European projects/Joint Actions.

Inclusion criteria were: records with available full text, concerning good or best practice evaluation or collection, that included some kind of definition, some selection criteria or some domains considered fundamental for defining, building, implementing or sharing good/best practices. There was no preventive language limitation and last update of the search was performed on 25th September 2017.

3.2. LITERATURE REVIEW RESULTS

A total of 10047 records were identified through databases search, while 370 additional records were identified using articles references and through websites and portals search. A total of 9378 abstracts were screened after duplicates removal: 8084 abstracts were deemed irrelevant for the topic (i.e. the title included some of the search terms but the paper was not about good practice definitions or experiences in Public Health) and 966 did not include definition, criteria or domains (i.e. they were not informative). A total of 339 records were assessed with full-text: 216 were deemed not relevant (i.e. despite the abstract content they did not include good practice definitions or experiences in Public Health) and 49 did not include definition, criteria or domains. A definitive number of 74 records (13-87) were included in the final review (Figure 1).

Figure 1: summary of literature search results



Among these 74 records, 51 were scientific papers, 11 were practices evaluation frameworks, 6 were sectorial evaluation frameworks and 6 were European Joint Action evaluation frameworks.

Overall, 38 different dimensions were cited in literature for good practices evaluation (Table 1). The most cited concepts were:

- Effectiveness (mentioned in 85.1% of the sources), the ability to achieve a desired outcome or to obtain the planned result;
- Reach (45.9%), the ability to obtain results on the intended target;
- Sustainability (40.5%), the ability to maintain results over time;
- Transferability (37.8%), the ability to be applied or adapted in other contexts;
- Context (33.7%), the geographical and social environment where the practice was proven effective;
- Cost (29.7%), the resources used for practice implementation and maintenance;
- Implementation (27.0%), the process of effectively putting a planned practice in place.

Table 1: number of citations for each good practice dimension

Dimension	N° of citations	Dimension	N° of citations
Effectiveness	63	Efficiency	6
Reach	34	Scalability	5
Sustainability	30	Maintenance	5
Transferability	28	Innovativeness	4
Context	25	Public Health Relevance	4
Cost	22	Quality	3
Implementation (broad)	20	Evolvability	2
Evidence	15	Comprehensiveness	2
Feasibility	14	Affordability	2
Stakeholders involvement	11	Barriers and Facilitators	2
Setting	10	Utility	2

Equity	9	Robustness	1
Dissemination (broad)	8	Answerability	1
Safety	8	Trialability	1
Efficacy	7	Observability	1
Acceptability	7	Readiness	1
Adoption	6	Appropriateness	1
Fidelity	6	Plausibility	1
Ethical	6		
Cost-effectiveness	6		

Going beyond single explicit definitions, many concepts could be grouped: *sustainability*, for example, implies availability of resources (economic or human) and therefore could be considered a synonym of *costs*; similarly, *reach* could include the concepts of *deliverability*, *satisfaction* or *utility*, as all those concepts imply the ability to obtain results on a specific target population.

Using this logic, whenever possible all the cited good practice concepts were grouped into five broader Dimensions (Table 2), obtaining 5 main dimensions: Effectiveness, Sustainability, Replicability, Reach and Context/Setting.

Table 2: grouped Dimensions definitions

Dimension (Synonym)	Definition (Oxford Dictionary)	Definition for good practice (from literature)	N° of citations
<i>Effectiveness</i> (Outcome, Public Health Impact, Evidence)	The degree to which something is successful in producing a desired result	The practice achieves the desired outcomes	78
<i>Sustainability</i> (Costs, Economic Resources, Funds, Feasibility)	The ability to be maintained at a certain rate or level	The practice can be maintained and achieve desired outcomes over time	73
<i>Replicability</i> (Generalizability, Transferability, Implementation)	The quality of being able to be exactly copied or reproduced	The practice can be applied to or adapted for various context	48
<i>Reach</i> (Deliverability, Satisfaction, Utility, Equity)	The extent or range of something's application, effect, or influence	The practice affects the intended and critical target population	43
<i>Context</i> (Setting)	The circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood	Geographical, socio-economical, socio-cultural environment (National, regional, local level of implementation)	25 (10)

Using these 5 main dimensions, a literature-based definition of good practice was obtained. *A Good Practice is a practice proven effective and sustainable, in a single context for a single target population, that can be replicable elsewhere.*

4.1 TOOL DEVELOPMENT METHODS

Using data from systematic review, 14 frameworks with good practice evaluation criteria were identified. All criteria from different frameworks were analyzed by a single researcher, removing duplicates and grouping them into previously identified thematic areas (dimension) and quality circle phase.

Scoring system was developed weighting each dimension with the number of citations inside the original systematic review; single criteria has the same weight inside each dimension.

Recommendations were developed contextually to the tool, using plan phase of each dimension.

4.2 TOOL DEVELOPMENT RESULTS

4.2.1 Tool for classification and evaluation of good practices in Public Health

For tool development, the 74 records of original systematic review were narrowed down to 14 that included a complete evaluation framework (Table 3): 8 frameworks available in literature, 3 sectorial frameworks and 3 EU Joint Actions evaluation frameworks.

Table 3: Frameworks included in FIRST Tool development

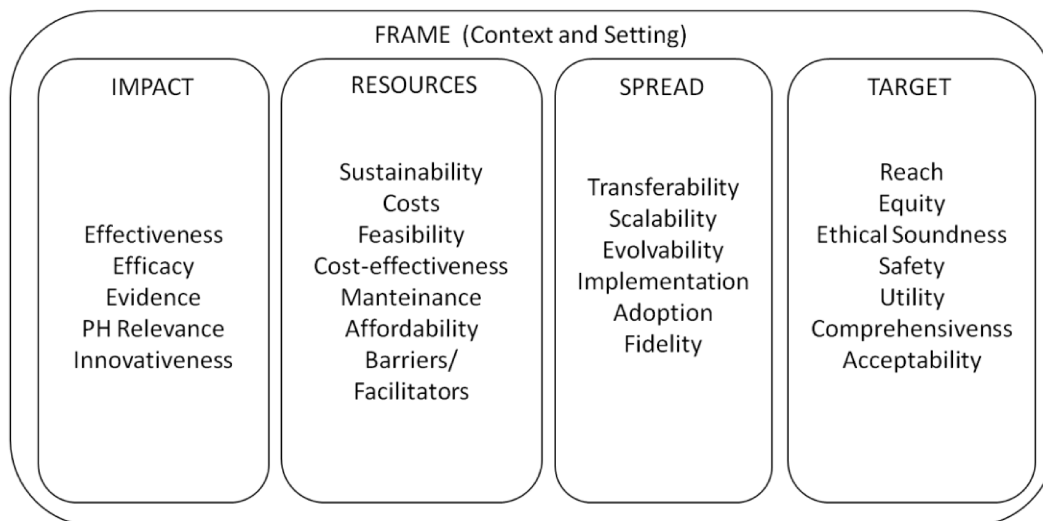
Framework	Year of publication
Frameworks available in literature	
PRECEDE-PROCEED	1997
Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM)	1999
Swift Worksite Assessment and Translation (SWAT)	2006
Practical, Robust Implementation and Sustainability (PRISM)	2008
Quality Implementation Framework (QIF)	2012
Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0)	2015
Systematic Screening and Assessment method (SSA)	2015
Quality and Impact of Component (QuIC) Evidence Assessment	2015
Sectorial frameworks	
Framework for classifying patient safety practices	2011
Good Practice Appraisal tool for obesity prevention	2011
Good Practices in Mental Health and Well Being	2017
Joint Action evaluation frameworks	
PASQ - European Union Network for Patient Safety and Quality of Care	2012
CHRODIS - Joint Action on Chronic Diseases	2015
RARHA - Joint Action on Reducing Alcohol Related Harm	2016

Overall, the 14 selected frameworks included a total of 148 criteria; among these, 26 were doubles/similar to each other and therefore grouped in a single criterion, obtaining a final number of 122 criteria.

The tool was built to serve a double purpose: evaluation of existing good practice and self-evaluation of own good practice development; therefore, the tool structure incorporates the 5 Dimensions obtained from the systematic review for the former and the quality improvement circle (Plan-Do-Check-Act) for the latter.

The 5 Dimensions were furtherly elaborated in a conceptual framework (Figure 2) named FIRST (acronym for Frame, Impact, Resources, Spread and Target).

Figure 2: FIRST framework conceptual development



Some subsections were identified whenever a concept was particularly relevant inside the reviewed frameworks: Frame Dimension includes Context and Setting, as they are referring to two different levels of environment (socio-geographical the former, national or local regulations the latter); Impact Dimension includes Effectiveness and Evidence; Resources Dimension takes into account Cost for first implementation and for Maintenance in time; Spread Dimension includes Implementation in the local context and Transferability in other settings.

The quality improvement circle, on the other hand, is a concept borrowed from industry (88) and introduced in healthcare in the early 1960s; it consists of 4 phases: *Plan* - when objectives are set and solutions for a certain problem is proposed, *Do* - when the solution is implemented, *Check* - when the process is measured to see if the desired results are achieved, *Act* - when results are taken into account for potential further improvement.

Using the quality circle concept, criteria for each Dimension were grouped into Plan phase, Do phase and Check phase; Act phase was added in each Dimension as an improvement goal for good practices already implemented and evaluated for adjustments.

Once completed, the FIRST tool (Table 4) included 45 Plan criteria, 51 DO criteria, 18 Check criteria and 8 Act criteria.

Table 4. FIRST Tool architecture

FRAME dimension

CONTEXT: Geographical, socio-economical, socio-cultural environment		
	The practice is planned considering its context	Evidence
PLAN1	During practice planning, a Social assessment is performed:	1
	Social problems are considered	
	Strengths and weaknesses are considered	
	Available resources are considered	
PLAN2	Community readiness for change are considered	
PLAN2	An Epidemiological assessment is performed, focusing on specific health problem/issue/need	1
PLAN3	A Behavioral diagnosis is performed, focusing on community attitude towards the health problem/issue/need previously identified	1
PLAN4	An Environmental diagnosis is performed, focusing on physical elements out of individual control and specific behavior	1, 5
	The practice is coherent to the context	Evidence
DO1	The intervention has a comprehensive approach to the health problem/issue/need, addressing all relevant determinants:	2
	Social determinants are addressed	2,4
	Epidemiological determinants are addressed	2
	Behavioral determinants are addressed	2
	Environmental determinants are addressed	2
DO2	An effective multidisciplinary and intersector partnership is in place	2
	The practice's impact is evaluated and compared to planned results in the context	Evidence
CHECK1	The context is conducive to evaluation and results of the practice	6
CHECK2	If yes, there are:	3
	Contextual elements that interact with the practice	3
	Observed associations between outcomes and relevant contextual elements	3
	The practice is modified after evaluation	Evidence
ACT1	The practice is modified after evaluation, considering new context elements	
SETTING: National, regional, local level environment		
	The practice is planned considering its setting	
PLAN1	During practice planning, a setting assessment is performed:	
	Predisposing factors of people involved are considered (individuals knowledge, beliefs, values, attitudes, etc.)	1
	Reinforcing factors of people involved are considered (rewards, social support, peer support, etc.)	1
PLAN2	An Administrative assessment is performed, considering organizational situations that could hinder or facilitate the development of the practice	1
PLAN3	A Policy assessment is performed, considering compatibility of program goals and objectives at local, national, institutional and international level	1
	The practice is coherent to the setting	
DO1	The intervention has a comprehensive approach to the health problem/issue/need, taking advantage from:	4
	Predisposing factors	
	Reinforcing factors	2,4
	Alignment with a policy plan at the local level	
	Alignment with a policy plan at the national, institutional and international level	2
	The practice's impact is evaluated and compared to planned results in the setting	
CHECK1	The setting is conducive to evaluation and results of the practice	4,6
CHECK2	If yes, there are:	3
	Setting elements that interact with the practice	3
	Observed associations between outcomes and relevant setting elements	3
	The practice is modified after evaluation	Evidence
ACT1	The practice is modified after evaluation, considering new setting elements	
Evidence	1.PRECEDE-PROCEED framework	
	2.CHRODIS - Joint Action on Chronic Diseases evaluation framework	
	3.Standards for Quality Improvement Reporting Excellence (SQUIRE) evaluation framework	
	4.Quality Implementation Framework (QIF)	
	5.Good Practice Appraisal tool for obesity prevention evaluation framework	
	6.Systematic Screening and Assessment method (SSA) evaluation framework	

Table 4. FIRST Tool architecture (continue)

IMPACT dimension

EFFECTIVENESS		
The practice is planned considering potential effectiveness		Evidence
PLAN1	The main health problem/issue to be addressed by the practice is comprehensively and clearly described	1
PLAN2	The practice's target group is clearly described based on relevant characteristics	1
PLAN3	The practice's design is described, including the following dimensions:	1, 2,7
	* Individual activity versus organisational change	7
	*Temporal (one-time vs repeated/long-term)	7
	* Pervasive in setting versus specific target	7
	* Common versus rare event as main issue to be addressed	7
PLAN4	There is a list of specific measurable objectives and outcomes that must be achieved in order to declare the practice successful	1,8,9
PLAN5	Indicators for the practice are SMART (specific, measurable, achievable, realistic, and timely)	2, 6
PLAN6	Effectiveness and outcomes are agreed with key stakeholders	8
PLAN7	Existing national/international guidelines on topic were taken into account during the development of the practice	5
PLAN8	Method of the evaluation is described	1
PLAN9	Potential unintended consequences of the practice are considered	8
The practice is effective		Evidence
DO1	A baseline measurement before implementation of the practice is obtained	9
DO2	A measurement after full implementation of the practice is obtained	9
DO3	The practice is assessed for outcomes, intended or unintended	2
DO4	The overall practice's effect on target is positive: the practice is effective	9,10
DO5	The outcomes found are the most relevant given the objective, programme theory and the target group of the practice	1, 2
DO6	The practice is consistent with public health ethical and practice standards (e.g., noncoercive, safe)	10
DO7	The practice is new or different from evidence-based recommendations or it's a substantial improvement on an existing effective practice	10
DO8	The practice is coordinated or linked with other relevant interventions	5
The practice's impact is evaluated and compared to planned results		Evidence
CHECK1	The practice have a monitoring system to gather and systematize the evaluation data with defined responsibilities, sources, and periodicity	2,6
CHECK2	There is a defined and appropriate evaluation framework assessing structure, process and outcomes, strengths and limitations	2,4
CHECK3	If yes, the results of evaluation are linked to reshape the implementation accordingly	2
CHECK4	Information on attrition (dropout rate) is available	1
The practice is modified after evaluation		Evidence
ACT1	The practice is modified after evaluation, considering new elements on effectiveness	
LEVEL OF EVIDENCE		Evidence
EV1	The intervention is built on a well-founded programme theory or is based on generally accepted and evidence-based theories	1
EV2	The practice is based on current scientific knowledge and/or theoretical models and/or previous experience from other projects	5
EV3	The design is appropriate and built upon relevant data, theory, context, evidence, previous practice including pilot studies.	2
EV4	Measures chosen for studying processes and outcomes of the practice includes their rationale, their operational definitions, and their validity and reliability	3
EV5	There is a description of the approach to the ongoing assessment of contextual elements that contributed to the success, failure, efficiency, and cost	3
EV6	Methods employed for assessing completeness and accuracy of data are described	3
EV7	Qualitative and quantitative methods used to draw inferences from the data	3
EV8	Methods for understanding variation within the data, including the effects of time as a variable are described	3
EV9	Level of evidence: Basic level: theoretically sound and with positive results (observational or qualitative studies)	1
	Level of evidence: First indications for effectiveness (pre- and post-design)	1
	Level of evidence: Good indications for effectiveness (pre-post controlled design)	1
	Level of evidence: Strong indications for effectiveness (pre-post controlled design with follow-up)	1
Evidence	1.RARHA - Joint Action on Reducing Alcohol Related Harm evaluation framework	
	2.CHRODIS - Joint Action on Chronic Diseases evaluation framework	
	3.Standards for Quality Improvement Reporting Excellence (SQUIRE) evaluation framework	
	4.Quality Implementation Framework (QIF)	
	5.Good Practice Appraisal tool for obesity prevention evaluation framework	
	6.Systematic Screening and Assessment method (SSA) evaluation framework	
	7.Framework for classifying patient safety practices	
	8.Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM)	
	9.PASQ - European Union Network for Patient Safety and Quality of Care evaluation framework	
	10.Swift Worksite Assessment and Translation (SWAT) evaluation framework	

Table 4. FIRST Tool architecture

Table 4. FIRST Tool architecture (continue)

RESOURCES dimension

MANTEINANCE IN TIME		
	The practice is planned considering manteinance in time	Evidence
PLAN1	The practice is planned for its effects to be maintained six or more months after it is completed	1,5
PLAN2	The practice is planned for its effects to be maintained one year or more after it is completed	1
PLAN3	The practice is planned with supporting for the the initial pahase and prevention for participants relapse	1
PLAN4	The challenges to the organization for continuing its support of the practice are foreseen	1
PLAN5	Leadership with decision-making power in the organization/community is involved	2
PLAN6	From front-line staff who will deliver the practice is involved	2
PLAN7	The local community (if applicable) is involved	2
PLAN8	One or more individuals who can inspire and lead others to implement the practice is involved	2
	The practice is manteined in time	Evidence
DO1	Key stakeholder commitment is ensured to continue the practice	1
DO2	There is broad support for the intervention amongst those who implement it	3
DO3	There is broad support for the intervention amongst the intended target	3
DO4	The practice is integrated into the regular activity of the organization	1,9
DO5	The continuation of the intervention is ensured through institutional ownership that guarantees funding and human resources and/or mainstreamed	3
	The practice's impact is evaluated and compared to planned results	Evidence
CHECK1	A long-term follow-up is carried out after the end of the implementation	5
	The practice is modiefied after evaluation	Evidence
ACT1	The practice is modified after evaluation, considering new elements on manteinance	
COSTS		
	The practice is planned considering costs	Evidence
PLAN1	Resources are available to provide long-term support to practice participants	1
PLAN2	The practice is planned considering intervention sustainability and potential additional funding need	1
PLAN3	The intervention includes an adequate estimation of the human resources, material and budget requirements in clear relation with committed tasks	3,6
	The practice's costs are documented and sustainable	Evidence
DO1	Sources of funding are specified in regards to stability and commitment	3
DO2	The necessary costs of and/or hours needed for the intervention are calculated specified and transparent	4,7
DO3	Associated cost with a work reduction or foregoing in order to deliver are calculated	7
DO4	The specific skills and vocational training of the professionals who implemented the intervention are described	4
DO5	Organisational structures are clearly defined and described (i.e.responsibility assignments, flows of communication and work and accountabilities)	3
	The practice's impact is evaluated and compared to planned results	Evidence
CHECK1	Resource utilization (funds, human resources, materials) for the intervention is monitored	5
CHECK2	Efficiency calculations are made	8
CHECK3	Cost-effectiveness calculations are made	5
	The practice is modiefied after evaluation	Evidence
ACT1	The practice is modified after evaluation, considering new elements on costs	
Evidence	1.Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM)	
	2.Quality Implementation Framework (QIF)	
	3.CHRODIS - Joint Action on Chronic Diseases evaluation framework	
	4.RARHA - Joint Action on Reducing Alcohol Related Harm evaluation framework	
	5.Good Practice Appraisal tool for obesity prevention evaluation framework	
	6.Systematic Screening and Assessment method (SSA) evaluation framework	
	7.PASQ - European Union Network for Patient Safety and Quality of Care evaluation framework	
	8.Quality and Impact of Component (QuIC) Evidence Assessment	
	9.Swift Worksite Assessment and Translation (SWAT) evaluation framework	

Table 4. FIRST Tool architecture (continue)

SPREAD dimension

	IMPLEMENTATION	
	The practice is planned considering implementation	Evidence
PLAN1	The practice is planned to be delivered by staff representing a variety of positions, levels and expertise/experience	1
PLAN2	The practice is planned flexible (while maintaining fidelity to the original design) to changes or corrections that may be required midcourse	1
PLAN3	The practice is planned with a system to document and track the progress and effect of changes made during the course	1
PLAN4	Threats to consistent implementation are identified	1
PLAN5	Possible negative effects of the practice have been identified	4
PLAN6	There is an implementation or action plan	4
	The practice is implemented	Evidence
DO1	The practice is partially implemented	5
	The practice is fully implemented	5
DO2	All the relevant staff of the organization is involved in supporting or delivering the practice	1
DO3	There is a list of the most prevalent difficulties encountered during implementation	5
DO4	There is a list of the most prevalent drivers for a successful implementation	5
DO5	Specific incentives are used to enhance motivation	5
DO6	Implementation process is supported by organization management or any other high level authority	5
DO7	Implementation process is supported by collaboration with other countries or international organisations	5
DO8	Possible negative effects of the practice are considered and minimized	6
	The practice's impact is evaluated and compared to planned results	Evidence
CHECK1	Changes to the practice are documented and monitored during implementation	2
CHECK2	Unintended consequences such as unexpected benefits, problems, failures or costs associated to the practice are evaluated	7
CHECK3	Ethical aspects of implementing the practice, including, but not limited to, formal ethics review and potential conflict of interest are evaluated	7
	The practice is modified after evaluation	Evidence
ACT1	The practice is modified after evaluation, considering new elements on implementation	
	TRANSFERABILITY	
	The practice is planned considering transferability	Evidence
PLAN1	The practice is designed to be replicable in similar organizations	1,8
PLAN2	Potential impact for scaling up is assessed	3
PLAN3	Potential impact for spread to other settings is assessed	7
PLAN4	Challenges to effective implementation in other settings are foreseen	2
	The practice is transferable	Evidence
DO1	There is a specific knowledge transfer strategy in place (evidence into practice)	3
DO2	There is an analysis of barriers that other sites or organizations may encounter while adopting the practice	1
DO3	There is an analysis of requirements for eventual scaling up, including barriers and facilitators (e.g. resources, organisational commitment, etc.)	3
DO4	Limits to the generalizability of the practice are assessed	7
DO5	The practice has a system in place for overcoming barriers in transferability	1,2
	The practice's impact is evaluated and compared to planned results	Evidence
CHECK1	Changes needed to make the practice successful in a new setting are evaluated	2
CHECK2	Lessons learned about implementing the practice are shared with others who have an interest	2
	The practice is modified after evaluation	Evidence
ACT1	The practice is successfully implemented in other health care settings	5
Evidence	1.Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM)	
	2.Quality Implementation Framework (QIF)	
	3.CHRODIS - Joint Action on Chronic Diseases evaluation framework	
	4.RARHA - Joint Action on Reducing Alcohol Related Harm evaluation framework	
	5.PASQ - European Union Network for Patient Safety and Quality of Care evaluation framework	
	6.Good Practice Appraisal tool for obesity prevention evaluation framework	
	7.Standards for Quality Improvement Reporting Excellence (SQUIRE) evaluation framework	
	8.Swift Worksite Assessment and Translation (SWAT) evaluation framework	

Table 4. FIRST Tool architecture (continue)

TARGET dimension

TARGET		
	The practice is planned considering target	Evidence
PLAN1	The practice is planned considering demographics of target population in terms of race/ethnicity, gender, age, and socioeconomic status and other important characteristics (e.g. health literacy)	1
PLAN2	Target population/s are defined on the basis of needs assessment including strengths and other characteristics	3
PLAN3	The practice is planned foreseeing barriers that may limit the ability to successfully reach intended target population	1
PLAN4	The practice is planned considering strategies to overcome these barriers	1
PLAN5	The practice objectives and design are set with target group involvement	3,5,6
PLAN6	Potential burdens, including harm, of the practice for the target population are considered	3
PLAN7	The engagement of intermediaries/multipliers is planned to promote the meaningful participation of the target population	3
PLAN8	Does the intervention have a special focus on vulnerable subgroups, including those most at risk and having the fewest resources (socioeconomically disadvantaged people, ethnic minorities, children, elderly people, etc.)	1,6
	The practice reaches its target	Evidence
DO1	The practice objectives and strategy are transparent to the target population and stakeholders involved	3,5,7
DO2	Data on implementation are shared with all those involved in the practice	2
DO3	Potential burdens, including harm, of the practice for the target population are addressed	3
DO4	The engagement of intermediaries/multipliers is used to promote the meaningful participation of the target population	3
DO5	The practice develops strengths, resources and autonomy in the target population	3
DO6	The practice achieves meaningful participation among the intended target population	3,4
DO7	The practice reaches all members of targeted population	1
DO8	The practice is implemented equitably, proportional to population needs	3
	The practice's impact is evaluated and compared to planned results	Evidence
CHECK1	Active seeking of stakeholders opinion, feedback, experience is an integral part of practice evaluation	2,5,6
	The practice is modified after evaluation	Evidence
ACT1	The practice is modified after evaluation, considering new elements on target	
Evidence	1.Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM)	
	2.Quality Implementation Framework (QIF)	
	3.CHRODIS - Joint Action on Chronic Diseases evaluation framework	
	4.RARHA - Joint Action on Reducing Alcohol Related Harm evaluation framework	
	5.PASQ - European Union Network for Patient Safety and Quality of Care evaluation framework	
	6.Good Practice Appraisal tool for obesity prevention evaluation framework	
	7.Systematic Screening and Assessment method (SSA) evaluation framework	

Finally, the scoring system was again developed considering the 5 Dimensions and the quality improvement circle.

Each Dimension has different weight on the final score according to the number of citations in the original systematic review (Table 5); however, as the Frame Dimension has potential effects on all the others, its original weight was spread on all Dimensions (*Framed weight* in the table).

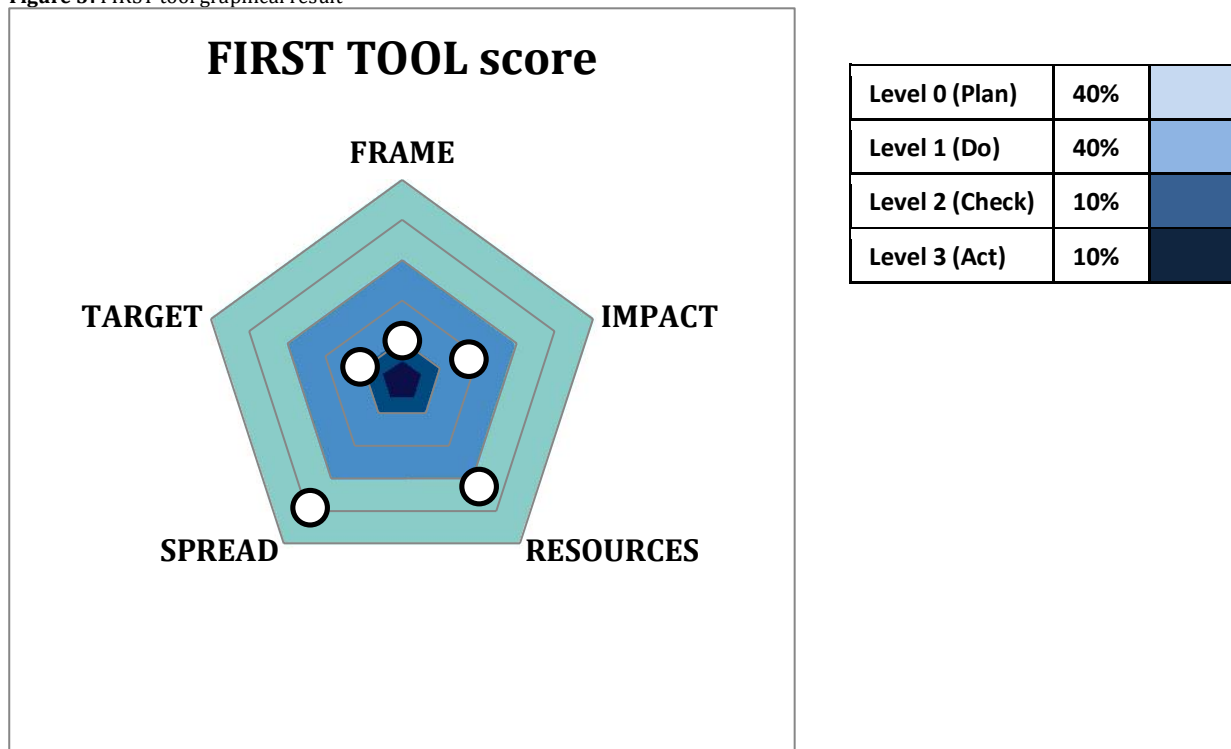
Table 5. Dimension weight in overall FRAME score

Dimension	Number of citations	Weight	Framed weight
FRAME	35	12.6%	3.2%
IMPACT	78	28.2%	31.3%
RESOURCES	73	26.4%	29.5%
SPREAD	48	17.3%	20.5%
TARGET	43	15.5%	18.7%
Total	277	100.0%	100.0%

Inside each dimension, Plan criteria weight 40% of the score, Do criteria weight 40%, Check criteria weight 10% and Act criteria weight the remaining 10%, with the purpose of balancing numbers (Check and Act criteria are numerically less than Plan and Do ones) underlying the importance of the planning and implementation phases.

Graphically, this concept was translated into a pentagram target, with different shades of blue representing the four phases of the quality improvement circle (Figure 3).

Figure 3: FIRST tool graphical result



Exemple of scoring system: RESOURCES dimension weights for 26.4% (without FRAME score addition) of the overall total and it's composed of 27 items; Plan items are 11 and weights 0.96% each (for a total of 10.54%, which is 40% of 26.4%), Do items are 10 and weights 1.05% each (for a total of 10.54%, which again is 40% of 26.4%), Check items are 4 and weights 0.66% (for a total of 2.64% which is 10% of 26.4%) and Act items are 2 and weights 1.32% (for a total of 2.64% which again is 10% of 26.4%).

4.2.2 Recommendations for good practices in Public Health development

Recommendations were developed refining Plan criteria of each Dimension inside the FIRST tool; redundant concepts were removed and each criterion was reformulated as a brief sentence. (Table 6)

Table 6: Recommendations for good practice

FRAME

Perform an assessment of the context considering strengths and weakness, available resources, readiness for change

Perform an epidemiological assessment on the health issue

Perform a behavioral diagnosis, focusing on community attitude towards the health issue previously identified

Perform an environmental diagnosis, focusing on physical elements out of individual control and specific behavior

IMPACT

Comprehensively and clearly describe the main issue to be addressed by the practice and the practice design

Define some specific SMART (specific, measurable, achievable, realistic, and timely) indicators

Take into account existing guidelines on topic during the development of the practice

Describe the method of the evaluation

Take into account potential unintended consequences of the practice

RESOURCES

Estimate the desired duration of the practice effects after it is completed

Plan supporting for the initial phase and prevention for participants relapse

Estimate the challenges to the organization for continuing its support of the practice

Involve the Leadership with decision-making power in the organization

Involve the front-line staff who will deliver the practice

Involve the local community (if applicable)

Involve one or more individuals who can inspire and lead others to implement the practice

SPREAD

Plan the practice to be delivered by staff representing a variety of positions, levels and expertise/experience

Plan the practice flexible (while maintaining fidelity to the original design) to changes or corrections that may be required midcourse

Plan the practice with a system to document and track the progress and effect of changes made during the course

Identify threats to consistent implementation

Build an implementation plan

TARGET

Consider demographics of target population in terms of race/ethnicity, gender, age, and socioeconomic status

Define target population on the basis of needs assessment

Estimate barriers that may limit the ability to successfully reach intended target population and consider strategies to overcome these barriers

Involve target group in the practice objectives and design

Consider special focus on vulnerable subgroups, including those most at risk and having the fewest resources

5.1 FIRST TOOL FIELD TESTING METHODS

Field testing was performed on a randomized sample of good practices available from three web-based portals: European Union Network for Patient Safety and Quality of Care, Canadian Best Practice Portal and European Commission Public Health Best Practice Portal.

GPs were all listed on single excel file and associated with a random generated number (RAND function) then ordered by increasing random number; the first third of the total number were analyzed applying the previously developed tool.

Data were stratified for setting (hospital, local, regional, national) and dimension and quality circle phase.

5.2 FIRST TOOL FIELD TESTING RESULTS

Overall, a total of 1032 Good Practices available from the three web-based portals: 668 in the European Union Network for Patient Safety and Quality of Care, 143 in the Canadian Best Practice Portal and 221 in the European Commission Public Health Best Practice Portal.

Among these, 340 were randomly selected and assessed using FIRST tool: 129 national good practices, 62 regional, 61 local and 88 single hospital GPs.

Regional good practices had the best overall mean score (58.0%), followed closely by national GPs (57.6%), while local (51.4%) and hospital GPs (47.3%) had lower mean scores (Table 7).

Impact Dimension had the highest overall mean score (63.3%), followed by Target (57.1%) and Frame (53.6%).

The greatest mean score gap between settings were in resources dimension (with regional GPs having the highest mean score of 53.4% and hospital GPs the lowest score of 32.8%) and spread (with national GPs having the highest mean score of 56.6% and hospital GPs the lowest score of 40.2%)

Table 7: Mean FIRST tool scores in different settings

Setting	FRAME	IMPACT	RESOURCES	SPREAD	TARGET	Total
Hospital (n.88)	55.3%	60.0%	32.8%	40.2%	50.0%	47.3%
Local (n.61)	49.1%	63.2%	38.9%	48.3%	56.2%	51.4%
Regional (n.62)	50.7%	69.3%	53.4%	50.1%	60.0%	58.0%
National (n.129)	55.8%	62.8%	51.6%	56.6%	60.9%	57.6%
Total	53.6%	63.3%	44.7%	49.7%	57.1%	53.6%

A similar picture is described by Table 8, with the mean number of quality improvement criteria achieved in the four different settings: regional level had the highest overall mean number (78.1), while hospital had the lowest (64.1); Do phase criteria were the most achieved (from 81,4% in the national setting to 75.4% in the local one), while Act phase criteria were the less achieved (from 26.3% in regional setting to 13.8% in the local one).

Table 8: Mean number (percentage) of quality improvement circle criteria in different settings

Setting	Plan (n.45)	Do (n.51)	Check (n.18)	Act (n.8)	Total (n.122)
Hospital level (n.88)	17.8 (39.6%)	38.6 (75.7%)	6.5 (36.1%)	1.2 (15.0%)	64.1 (52.5%)
Local level (n.61)	23.5 (52.2%)	37.9 (74.3%)	5.9 (32.8%)	1.1 (13.8%)	68.4 (56.1%)
Regional level (n.62)	28.6 (63.6%)	41.3 (81.0%)	6.1 (33.9%)	2.1 (26.3%)	78.1 (64.0%)

Concerning feasibility and sustainability the overall amount of time spent for GPs evaluation was around 140 hours, therefore a single GP, on average, took around 25 minutes to be evaluated with FIRST tool.

6. DISCUSSION

6.1 Good practice definition

Although the term good practice is commonly used in Public Health, there are many synonyms currently used for the same concept: effective practice, working intervention, effective solution, promising practice, innovative practice and best practice.

Spencer et al. (46) tried to establish a hierarchy defining promising or innovative practices those showing some little evidence of potential effectiveness, leading practices those proven effective, and best practices those that not only proven effective but also rigorously evaluated with Evidence Based Medicine (EBM) criteria; despite evidence not being cited often in the reviewed literature, the importance of scientific approach and evidence production was taken in to account and included into IMPACT dimension of FIRST tool.

Nevertheless, good practice is often the preferred definition to avoid associating a concept of perfection to single interventions (89), even if best practices should not be considered in its superlative form (80) but as interventions that meet a set of pre-defined criteria based on organizational priorities over time (90).

Ng et al. (42) tried a systematic approach on the issue with a systematic review, that included a definition of best practice, which resulted in “[*Best practices are*] practices that have shown evidence of effectiveness in improving population health when implemented in a specific real-life setting and are likely to be replicable in other setting”

Many core concepts of this definition are in common with the results of our systematic review, with some important distinctions.

First of all, it is completely lacking the resources dimension (a GP should be *sustainable*), which was the second for number of citations in the reviewed literature, therefore representing a key issue for good practice development, implementation and maintenance.

Secondly, there is a strong focus on population health improvement, which is clearly fundamental in public health but somehow limiting, as there are many other good practice

outcomes that can directly or indirectly have positive effects on a certain population; on the other hand, there is no specific focus on *target* population, but our review found that the reach dimension was the fourth for numbers of citations.

Finally, “real-life setting” is a narrow definition that apparently doesn’t take context into account.

Context is a cross cutting issue for practice implantation (91), as effectiveness of good practices as well as their capability to reach all relevant target populations is critically influenced by their implementation in a given context; underestimating this will contribute to the critical gap between research and practice.

A comprehensive approach on this issue is given by the Context and Implementation of Complex Interventions (CICI) framework (14), which combine three dimensions: context (that includes geographical, epidemiological, socio-cultural, socio-economic, ethical, legal and political);, implementation (theory, process, strategies, agents and outcomes) and setting (specific physical location where the intervention is put into practice); the intervention and the way it is implemented in a given setting and context can occur on a *micro* (single organization), *meso* (regional) and *macro* (national/international policy) level.

Even if CICI framework was part of the systematic review, it had not the proper characteristics to be considered for the FIRST tool inclusion; nevertheless, its core concepts are represented in FRAME and SPREAD dimensions.

6.2 FIRST tool

There are in literature successful experiences of evaluation and self-evaluation tools (92) that were tested in different contexts.

The key characteristics pursued by these tools were the ability to identify areas of improvement and flexibility in being applicable to different realities.

FIRST Tool field testing gave us a moderate level of criteria achievement (53,6% was the overall mean score), showing that the tool is balanced if not on the demanding side.

Setting stratification results may indicate how good practices are planned and developed in different environments: national and regional GPs (more widespread settings) were generally better performing, on resources in particular but also in spread and target dimension, while hospital GPs had higher scores only in the FRAME Dimension.

This may be related to the fact that widespread interventions were more carefully planned with resources for maintenance over time and with a clear purpose of diffusion and

population reach; hospital GPs, on the other hand, were possibly more linked to their limited setting when implemented.

All settings performed well in impact dimension, thus demonstrating that effectiveness was the core of good practice planning and implementation.

Analyzing quality improvement criteria, Do phase was the most performing one in all settings (up to 81.4% of criteria on national GPs), followed by Plan phase (up to 63.6% of criteria on regional GPs), while Check and Act phase were way less performing on average (13.8% of criteria in the Act phase for local GPs); these results reflect the fact that the first half of the quality improvement circle (planning and doing) often requires less commitment than measuring results and working on improvement actions.

Both domain mean scores and mean quality improvement circle criteria showed that the tool could clearly identify the areas that needed improvement in the various settings.

Field testing was conducted by a single operator, which represents the main limitation, as inter-rater reliability is not evaluated; another limitation is that only information available on the three web portals were used and the plan phase results may have been underestimated for the lack of details reported; in fact, the application of FIRST tool by each GP developer on their own good practice could have bring some different results.

Finally, further steps would be testing FIRST tool for reliability (e.g. Cronbach's α , test-retest study) and validating the scoring system using a consensus methodology (e.g. Delphi technique) (93).

7. CONCLUSION

The study produced a definition of good practice built on five domains based on the evidence available in literature, including frameworks from the most recent European Joint Action experiences.

The FIRST tool was developed using frameworks available in literature, representing the first evaluation and self-evaluation tool for good practices.

With all the study limitations, the FIRST tool may be effective in providing a picture of different GPs settings, describing stronger dimensions and improvement opportunities; setting stratification proved that the tool may also be flexible, although more suitable for widespread interventions than little, more local, experiences.

8. REFERENCES

1. DIRECTIVE 2011/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 on the application of patients' rights in cross-border healthcare.
2. The WHO Performance Assessment Tool for Quality Improvement in Hospitals (PATH). Geneva: World Health Organization; 2007.
3. Brownson RC, Fielding JE, Maylahn CM. Evidence-based public health: a fundamental concept for public health practice. *Annu Rev Public Health*. 2009;30:175-201.
4. Green LW. Making research relevant: if it is an evidence based practice, where's the practice-based evidence? *Fam Pract*. 2008 Dec;25 Suppl 1:i20-4.
5. Pronovost PJ, Berenholtz SM, Needham DM. Translating evidence into practice: a model for large scale knowledge translation. *BMJ*. 2008 Oct 6;337:a1714.
6. Lomazzi M. A Global Charter for the Public's Health-the public health system: role, functions, competencies and education requirements. *Eur J Public Health*. 2016 Apr;26(2):210-2.
7. IOM. For the Public's Health: The Role of Measurement in Action and Accountability, Washington, DC: National Academy Press; 2011.
8. Swensen SJ, Meyer GS, Nelson EC, Hunt GC Jr, Pryor DB, Weissberg JI, Kaplan GS, Daley J, Yates GR, Chassin MR, James BC, Berwick DM. Cottage industry to postindustrial care-the revolution in health care delivery. *N Engl J Med*. 2010 Feb 4;362(5):e12.
9. World Health Organization. Hand Hygiene Self-Assessment Framework. Geneva: World Health Organization; 2010.
10. ICALIN: Indicateur composite des activités de lutte contre les infections nosocomiales. [homepage on the Internet]. Paris: Ministère des Affaires sociales et de la Santé; 2004. [accessed March, 2013] <http://www.icalin.sante.gouv.fr/>
11. Merle V, Germain JM, Tavolacci MP, Brocard C, Chefson C, Cyvoct C, Edouard S, Guet L, Martin E, Czernichow P. Influence of infection control report cards on patients' choice of hospital: pilot survey. *J Hosp Infect*. 2009 Mar;71(3):263-8.
12. Ministère des Affaires sociales et de la Santé. Modalites de calcul et de classement du score agrege du tableau de bord des infections nosocomiales. [accessed September, 2017] http://www.sante.gouv.fr/IMG/pdf/fiche_technique_score.pdf
13. Daumit G, Boulware LE, Powe NR, Minkovitz CS, Frick KD, Anderson LA, Janes GR, Lawrence RS. A computerized tool for evaluating the effectiveness of preventive interventions. *Public Health Rep*. 2001;116 Suppl 1:244-53.

14. Morales Asencio JM1, Gonzalo Jiménez E, Martín Santos FJ, Morilla Herrera JC. Evidence Based Public Health: resources on effectiveness of community interventions. *Rev Esp Salud Publica*. 2008 Jan-Feb;82(1):5-20.
15. Centers for Disease Control and prevention. Assessing the effectiveness of disease and injury prevention programs: costs and consequences. *MMWR Recomm Rep*. 1995 Aug 18;44(RR-10):1-10.
16. Neta G, Glasgow RE, Carpenter CR, Grimshaw JM, Rabin BA, Fernandez ME, Brownson RC. A Framework for Enhancing the Value of Research for Dissemination and Implementation. *Am J Public Health*. 2015 Jan;105(1):49-57.
17. Lokker C, McKibbin KA, Colquhoun H, Hempel S. A scoping review of classification schemes of interventions to promote and integrate evidence into practice in healthcare. *Implement Sci*. 2015 Mar 3;10:27.
18. Stoll S, Janevic M, Lara M, Ramos-Valencia G, Stephens TB, Persky V, Uyeda K, Ohadike Y, Malveaux F. A Mixed-Method Application of the Program Sustainability Assessment Tool to Evaluate the Sustainability of 4 Pediatric Asthma Care Coordination Programs. *Prev Chronic Dis*. 2015 Dec 3;12:E214.
19. Cohen JE, Donaldson EA. A framework to evaluate the development and implementation of a comprehensive public health strategy. *Publ Health* 2013;127:791-3.
20. Schmid TL, Librett J, Neiman A, Pratt M, Salmon A. A framework for evaluating community-based physical activity promotion programmes in Latin America. *Promot Educ*. 2006;13(2):112-8.
21. Shaban-Nejad A, Okhmatovskaia A, Shin EK, Davis RL, Franklin BE, Buckeridge DL. A Semantic Framework for Logical Cross-Validation, Evaluation and Impact Analyses of Population Health Interventions. *Stud Health Technol Inform*. 2017;235:481-485.
22. Fernald D, Harris A, Deaton EA, Weister V, Pray S, Baumann C, Levinson A. A standardized reporting system for assessment of diverse public health programs. *Prev Chronic Dis*. 2012;9:E147.
23. Compernelle S, De Cocker K, Lakerveld J, Mackenbach JD, Nijpels G, Oppert JM, Rutter H, Teixeira PJ, Cardon G, De Bourdeaudhuij I. A RE-AIM evaluation of evidence-based multi-level interventions to improve obesity-related behaviours in adults: a systematic review (the SPOTLIGHT project). *Int J Behav Nutr Phys Act*. 2014 Dec 6;11:147.

24. Aarons GA, Sklar M, Mustanski B, Benbow N, Brown CH. "Scaling-out" evidence-based interventions to new populations or new health care delivery systems. *Implement Sci.* 2017 Sep 6;12(1):111.
25. Lewin S, Hendry M, Chandler J, Oxman AD, Michie S, Shepperd S, Reeves BC, Tugwell P, Hannes K, Rehfuess EA, Welch V, McKenzie JE, Burford B, Petkovic J, Anderson LM, Harris J, Noyes J. Assessing the complexity of interventions within systematic reviews: development, content and use of a new tool (iCAT_SR). *BMC Med Res Methodol.* 2017 Apr 26;17(1):76.
26. Smith MY, Morrato E. Advancing the field of pharmaceutical risk minimization through application of implementation science best practices. *Drug Saf.* 2014 Aug;37(8):569-80.
27. Scheirer MA, Dearing JW. An agenda for research on the sustainability of public health programs. *Am J Public Health.* 2011 Nov;101(11):2059-67.
28. Kelly C, Scharff D, Larose J, Dougherty NL, Hessel AS, Brownson RC. A tool for rating chronic disease prevention and public health interventions. *Prev Chronic Dis.* 2013 Dec 12;10:E206.
29. Have MT, van der Heide A, Mackenbach JP, de Beaufort ID. An ethical framework for the prevention of overweight and obesity: a tool for thinking through a programme's ethical aspects. *Eur J Public Health.* 2013 Apr;23(2):299-305.
30. Catto AG, Zgaga L, Theodoratou E, Huda T, Nair H, El Arifeen S, Rudan I, Duke T, Campbell H. An evaluation of oxygen systems for treatment of childhood pneumonia. *BMC Public Health.* 2011 Apr 13;11 Suppl 3:S28.
31. Lorenc T, Oliver K. Adverse effects of public health interventions: a conceptual framework. *J Epidemiol Community Health.* 2014 Mar;68(3):288-90.
32. Wang S, Moss JR, Hiller JE. Applicability and transferability of interventions in evidence-based public health. *Health Promot Int.* 2006 Mar;21(1):76-83.
33. O'Connor DP, Lee RE, Mehta P, Thompson D, Bhargava A, Carlson C, Kao D, Layne CS, Ledoux T, O'Connor T, Rifai H, Gulley L, Hallett AM, Kudia O, Joseph S, Modelska M, Ortega D, Parker N, Stevens A; EC-CORD (BETTER Policies) Team. Childhood Obesity Research Demonstration project: cross-site evaluation methods. *Child Obes.* 2015 Feb;11(1):92-103.
34. Shigayeva A, Coker RJ. Communicable disease control programmes and health systems: an analytical approach to sustainability. *Health Policy Plan.* 2015 Apr;30(3):368-85.

35. Pfadenhauer LM, Mozygemba K, Gerhardus A, Hofmann B, Booth A, Lysdahl KB, Tummers M, Burns J, Rehfues EA. Context and implementation: A concept analysis towards conceptual maturity. *Z Evid Fortbild Qual Gesundhwes.* 2015;109(2):103-14.
36. Cadogan CA, Ryan C, Francis JJ, Gormley GJ, Passmore P, Kerse N, Hughes CM. Development of an intervention to improve appropriate polypharmacy in older people in primary care using a theory-based method. *BMC Health Serv Res.* 2016 Nov 16;16(1):661.
37. McLees AW, Nawaz S, Thomas C, Young A. Defining and assessing quality improvement outcomes: a framework for public health. *Am J Public Health.* 2015 Apr;105 Suppl 2:S167-73.
38. Wolfenstetter SB. Conceptual framework for standard economic evaluation of physical activity programs in primary prevention. *Prev Sci.* 2011 Dec;12(4):435-51.
39. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Health.* 1999 Sep;89(9):1322-7.
40. Shekelle PG, Maglione MA, Luoto J, Johnsen B, Perry TR. Global Health Evidence Evaluation Framework. Rockville (MD): Agency for Healthcare Research and Quality (US); 2013 Jan.
41. Sivaram S, Sanchez MA, Rimer BK, Samet JM, Glasgow R5. Implementation science in cancer prevention and control: a framework for research and programs in low- and middle-income countries. *Cancer Epidemiol Biomarkers Prev.* 2014 Nov;23(11):2273-84.
42. Ng E, de Colombani P. Framework for Selecting Best Practices in Public Health: A Systematic Literature Review. *J Public Health Res.* 2015 Nov 17;4(3):577.
43. Brandstetter S, Curbach J, Lindacher V, Rueter J, Warrelmann B, Loss J. Empowerment for healthy nutrition in German communities: a study framework. *Health Promot Int.* 2017 Jun 1;32(3):500-510.
44. Horodyska K, Luszczynska A1, van den Berg M, Hendriksen M, Roos G, De Bourdeaudhuij I, Brug J. Good practice characteristics of diet and physical activity interventions and policies: an umbrella review. *BMC Public Health.* 2015 Jan 21;15:19.
45. Brug J, van Dale D, Lanting L, Kremers S, Veenhof C, Leurs M, van Yperen T, Kok G. Towards evidence-based, quality-controlled health promotion: the Dutch recognition system for health promotion interventions. *Health Educ Res.* 2010 Dec;25(6):1100-6.

46. Spencer LM, Schooley MW, Anderson LA, Kochtitzky CS, DeGross AS, Devlin HM, Mercer SL. Seeking best practices: a conceptual framework for planning and improving evidence-based practices. *Prev Chronic Dis.* 2013 Dec 12;10:E207.
47. Montague S1, Porteous NL. The case for including reach as a key element of program theory. *Eval Program Plann.* 2013 Feb;36(1):177-83.
48. Albert D, Fortin R, Lessio A, Herrera C, Riley B, Hanning R, Rush B. Strengthening chronic disease prevention programming: the Toward Evidence-Informed Practice (TEIP) Program Assessment Tool. *Prev Chronic Dis.* 2013 May 30;10:E88.
49. Salisbury C, Thomas C, O'Cathain A, Rogers A, Pope C, Yardley L, Hollinghurst S, Fahey T, Lewis G, Large S, Edwards L, Rowsell A, Segar J, Brownsell S, Montgomery AA. Telehealth in CHronic disease: mixed-methods study to develop the TECH conceptual model for intervention design and evaluation. *BMJ Open.* 2015 Feb 6;5(2):e006448.
50. Fischer AJ, Threlfall A, Meah S, Cookson R, Rutter H, Kelly MP. The appraisal of public health interventions: an overview. *J Public Health (Oxf).* 2013 Dec;35(4):488-94.
51. Jacobson N, Johnson R, Deyo B, Alagoz E, Quanbeck A. Systems consultation for opioid prescribing in primary care: a qualitative study of adaptation. *BMJ Qual Saf.* 2019 May;28(5):397-404.
52. Feldstein AC, Glasgow RE. A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. *Jt Comm J Qual Patient Saf.* 2008 Apr;34(4):228-43.
53. Gyurcsik NC, Brittain DR. Partial examination of the public health impact of the People with Arthritis Can Exercise (PACE) program: reach, adoption, and maintenance. *Public Health Nurs.* 2006 Nov-Dec;23(6):516-22.
54. Noonan RK, Wilson KM, Mercer SL. Navigating the road ahead: public health challenges and the interactive systems framework for dissemination and implementation. *Am J Community Psychol.* 2012 Dec;50(3-4):572-80.
55. Shegog R, Markham C, Peskin M, Dancel M, Coton C, Tortolero S. "It's your game": an innovative multimedia virtual world to prevent HIV/STI and pregnancy in middle school youth. *Stud Health Technol Inform.* 2007;129(Pt 2):983-7.
56. Hoddinott P, Allan K, Avenell A, Britten J. Group interventions to improve health outcomes: a framework for their design and delivery. *BMC Public Health.* 2010 Dec 31;10:800.
57. Scheirer MA. Linking sustainability research to intervention types. *Am J Public Health.* 2013 Apr;103(4):e73-80.

58. McNeil DA, Flynn MA. Methods of defining best practice for population health approaches with obesity prevention as an example. *Proc Nutr Soc.* 2006 Nov;65(4):403-11.
59. Pfadenhauer LM, Gerhardus A, Mozygemba K, Lysdahl KB, Booth A, Hofmann B, Wahlster P, Polus S, Burns J, Brereton L, Rehfues E. Making sense of complexity in context and implementation: the Context and Implementation of Complex Interventions (CICI) framework. *Implement Sci.* 2017 Feb 15;12(1):21.
60. Milat AJ, Bauman A, Redman S. Narrative review of models and success factors for scaling up public health interventions. *Implement Sci.* 2015 Aug 12;10:113.
61. Burchett HE, Mayhew SH, Lavis JN, Dobrow MJ. When can research from one setting be useful in another? Understanding perceptions of the applicability and transferability of research. *Health Promot Int.* 2013 Sep;28(3):418-30.
62. Perleth M, Jakubowski E, Busse R. What is 'best practice' in health care? State of the art and perspectives in improving the effectiveness and efficiency of the European health care systems. *Health Policy.* 2001 Jun;56(3):235-50.
63. Gill S, Kuwahara R, Wilce M. Through a Culturally Competent Lens: Why the Program Evaluation Standards Matter. *Health Promot Pract.* 2016 Jan;17(1):5-8.
64. Kringos DS, Sunol R, Wagner C, Mannion R, Michel P, Klazinga NS, Groene O; DUQuE Consortium. The influence of context on the effectiveness of hospital quality improvement strategies: a review of systematic reviews. *BMC Health Serv Res.* 2015 Jul 22;15:277.
65. Baral SD, Wirtz A, Sifakis F, Johns B, Walker D, Beyrer C. The highest attainable standard of evidence (HASTE) for HIV/AIDS interventions: toward a public health approach to defining evidence. *Public Health Rep.* 2012 Nov-Dec;127(6):572-84.
66. Centers for Disease Control and prevention. Framework for program evaluation in public health. *MMWR* 1999;48(No. RR-11):1-40.
67. Sullivan SD, Mauskopf JA, Augustovski F, Jaime Caro J, Lee KM, Minchin M, Orlewska E, Penna P, Rodriguez Barrios JM, Shau WY. Budget impact analysis-principles of good practice: report of the ISPOR 2012 Budget Impact Analysis Good Practice II Task Force. *Value Health.* 2014 Jan-Feb;17(1):5-14.
68. Federal Coordinating Council for Comparative Effectiveness Research. Report to the President and Congress. Washington (DC): US Department of Health and Human Services; 2009 Jun.

69. Wandersman A, Duffy J, Flaspohler P, Noonan R, Lubell K, Stillman L, Blachman M, Dunville R, Saul J. Bridging the gap between prevention research and practice: the interactive systems framework for dissemination and implementation. *Am J Community Psychol.* 2008 Jun;41(3-4):171-81.
70. Collins LM, Murphy SA, Strecher V. The multiphase optimization strategy (MOST) and the sequential multiple assignment randomized trial (SMART): new methods for more potent eHealth interventions. *Am J Prev Med.* 2007 May;32(5 Suppl):S112-8.
71. Howat P, Jones S, Hall M, Cross D, Stevenson M. The PRECEDE-PROCEED model: application to planning a child pedestrian injury prevention program. *Inj Prev.* 1997 Dec;3(4):282-7.
72. Ogrinc G, Davies L, Goodman D, Batalden P, Davidoff F, Stevens D. SQUIRE 2.0 (Standards for Quality Improvement Reporting Excellence): revised publication guidelines from a detailed consensus process. *BMJ Qual Saf.* 2016 Dec;25(12):986-992.
73. Downey LH, Peterson DJ, LeMenestrel S, Leatherman J, Lang J. The Systematic Screening and Assessment Method: An Introduction and Application. *Journal of Extension.* 2015 Apr; 53 (2): 1-7.
74. van Panhuis WG, Paul P, Emerson C, Grefenstette J, Wilder R, Herbst AJ, Heymann D, Burke DS. A systematic review of barriers to data sharing in public health. *BMC Public Health.* 2014 Nov 5;14:1144.
75. Dunet DO, Sparling PB, Hersey J, Williams-Piehota P, Hill MD, Hanssen C, Lawrenz F, Reyes M. A new evaluation tool to obtain practice-based evidence of worksite health promotion programs. *Prev Chronic Dis.* 2008 Oct;5(4):A118
76. Meyers DC, Durlak JA, Wandersman A. The quality implementation framework: a synthesis of critical steps in the implementation process. *Am J Community Psychol.* 2012 Dec;50(3-4):462-80.
77. Sassi, F. (ed.). *Tackling Harmful Alcohol Use: Economics and Public Health Policy.* Paris: OECD Publishing, 2015.
78. Kroezen M, Van Hoegaerden M, Batenburg R. The Joint Action on Health Workforce Planning and Forecasting: Results of a European programme to improve health workforce policies. *Health Policy.* 2018 Feb;122(2):87-93.
79. Joint Action on Mental Health and Wellbeing. *European Framework for Action on Mental Health and Wellbeing.* Bruxelles: JA MH-WB, 2016 jan.

80. World Health Organization. Documenting and sharing “Best Practices” in Health programmes. Brazzaville: WHO, 2008.
81. Ciaccio Pd, Ferraro C, Brezovsky P, Martìn-Escobar E, Costa AN; MODE consortium. The joint action MODE (Mutual Organ Donation and Transplantation Exchanges): a sound contribution to implementation of health policies in organ donation and transplantation. *Arch Public Health*. 2013 Feb 19;71(1):3.
82. Bottaro S, Garel P, Agra Y. European Network for Patient Safety and Quality of Care: PaSQ. *Rev Calid Asist*. 2016 Jun;31 Suppl 1:1-3.
83. Onder G, Palmer K, Navickas R, Jurevičienė E, Mammarella F, Strandzheva M, Mannucci P, Pecorelli S, Marengoni A; Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS). Time to face the challenge of multimorbidity. A European perspective from the joint action on chronic diseases and promoting healthy ageing across the life cycle (JA-CHRODIS). *Eur J Intern Med*. 2015 Apr;26(3):157-9.
84. Jetha N, Robinson K, Wilkerson T, Dubois N, Turgeon V, DesMeules M. Supporting knowledge into action: The Canadian Best Practices Initiative for Health Promotion and Chronic Disease Prevention. *Can J Public Health*. 2008 Sep-Oct;99(5):11-8.
85. Dy SM, Taylor SL, Carr LH, Foy R, Pronovost PJ, Ovretveit J, Wachter RM, Rubenstein LV, Hempel S, McDonald KM, Shekelle PG. A framework for classifying patient safety practices: results from an expert consensus process. *BMJ Qual Saf*. 2011 Jul;20(7):618-24. doi: 10.1136/bmjqs.2010.049296.
86. World Health Organization. Good Practice Appraisal Tool for obesity prevention programmes, projects, initiatives and interventions. Geneva: WHO, 2011.
87. Barbero C, Gilchrist S, Schooley MW, Chriqui JF, Luke DA, Eyler AA. Appraising the evidence for public health policy components using the quality and impact of component evidence assessment. *Glob Heart*. 2015 Mar;10(1):3-11.
88. Rohrbasser A, Harris J, Mickan S, Tal K, Wong G. Quality circles for quality improvement in primary health care: Their origins, spread, effectiveness and lacunae- A scoping review. *PLoS One*. 2018 Dec 17;13(12):e0202616.
89. Food and Agriculture Organisation of the United Nations. FAO good practices. Available from: <http://www.fao.org/capacitydevelopment/goodpractices/gphome/en/>. Accessed May 2017.

90. Øyen E. A methodological approach to best practices. In: Øyen E, Cimadamore A eds. Best practices in poverty reduction: an analytical framework. London: Zed Books; 2002. pp 1-28.
91. Neta G, Glasgow RE, Carpenter CR, Grimshaw JM, Rabin BA, Fernandez ME, Brownson RC. A Framework for Enhancing the Value of Research for Dissemination and Implementation. *Am J Public Health*. 2015 Jan;105(1):49-57.
92. Tricarico P, Tardivo S, Sotgiu G, Moretti F, Poletti P, Fiore A, Monturano M, Mura I, Privitera G, Brusaferrò S. Clinical Assessment of Risk Management: an INtegrated Approach (CARMINA). *Int J Health Care Qual Assur*. 2016 Aug 8;29(7):744-58.
93. Black N, Murphy M, Lamping D, McKee M, Sanderson C, Askham J, Marteau T. Consensus development methods: a review of best practice in creating clinical guidelines. *J Health Serv Res Policy*. 1999 Oct;4(4):236-48.