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REVIEW ARTICLE

The evolution of public health ethics frameworks: systematic review of moral values and norms in public health policy

Mahmoud Abbasi[1] · Reza Majdzadeh[2] · Alireza Zali[3] · Abbas Karimi[4] · Forouzan Akrami[1]

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Abstract Given the evolution of the public health (PH) and the changes from the phenomenon of globalization, this area has encountered new ethical challenges. In order to find a coherent approach to address ethical issues in PH policy, this study aimed to identify the evolution of public health ethics (PHE) frameworks and the main moral values and norms in PH practice and policy. According to the research questions, a systematic search of the literature, in English, with no time limit was performed using the main keywords in databases Web of Science (ISI) and PubMed. Finally, the full text of 56 papers was analyzed. Most of the frameworks have common underpinning assumptions and beliefs, and the need to balance PH moral obligation to prevent harm and health promotion with respect for individual autonomy has been specified. As such, a clear shift from liberal values in biomedical ethics is seen toward the community's collective values in PHE. The main moral norms in PH practice and policy included protecting the population against harm and improving PH benefits, utility and evidenced-based effectiveness, distributive justice and fairness, respect for all, privacy and confidentiality, solidarity, social responsibility, community empowerment and participation, transparency, accountability and trust. Systematic review of PHE frameworks indicates utilization of the aforementioned moral norms through an practical framework as an ethical guide for action in the PH policy. The validity of this process requires a systematic approach including procedural conditions.

Keywords Public heath · Health policy · Morals/ethics · Justice

✉ Forouzan Akrami
froozan_akrami@yahoo.com

[1] Medical Ethics and Law Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[2] Community Based Participatory Research Center and Knowledge Utilization Research Center, Tehran University of Medical Sciences, Tehran, Iran

[3] Functional Neurosurgery Research Center, Shohada Tajrish Neurosurgical Center of Excellence, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[4] Faculty of Law and Political Science, University of Tehran, Tehran, Iran

Introduction

Public Health Ethics (PHE) is a relatively new field of bioethics, and is related to moral implications of a wide range of activities aimed at maintaining and improving the population health. PHE is an area that includes both moral and real issues in health policy and health science. With increasing growth of risk factors, infectious disease threats and chronic health problems such as diabetes and obesity, policy makers, Public Health (PH) professionals and community stakeholders should address complex moral conflicts of PH practice (Childress and Bernheim 2015).

According to the classic definition of Institute of Medicine, the PH is what we as a society collectively do to ensure the conditions in which the public can live healthy. The definition indicates a collective effort, but at the same time refers to ensuring of the conditions in which the public could live healthy. We started with activity, but the topic is inevitably tied with the PH goals such as *empowerment of healthy people in healthy communities* (Institute of Medicine 2003; Childress and Bernheim 2015).

PH authorities for prevention of disease, disability and death are faced with numerous decisions. Although the PH is an important ethical measure with moral foundations, yet some of its interventions threaten other moral norms such

as autonomy, privacy and confidentiality. It has been widely acknowledged that answering ethical questions on PH needs a different approach than traditional medical ethics (Kass 2001). The primary and classic goal of PH includes disease prevention rather than treatment of disease; unlike medical practice that is related with patients' treatment, PH performance focuses on the health of the population. Because of the differences between clinical and PH practice, application of ethical principles in these two areas is different. According to PH focus on the prevention, this area has always been faced with dilemmas of appropriate scope of its achievement and moral interference of its activities with personal freedom (Faden and Shebaya 2016).

PH is not only the traditional function of government to protect the public against imminent threats, but at a basic level, it is cooperative behavior and trusting relationships in the communities, and as much as a wide agenda to address complex social, behavioral and environmental conditions affecting health. American Public Health Association has defined 10 essential functions for effective implementation (APHA 2014), which is the reason for the variety of the theoretical and practical frameworks that have been suggested over time for PHE. In order to find a coherent approach to address ethical issues in PH policy and practice, we systematically reviewed ethical frameworks of PH with the aim of identifying the evolution of PHE frameworks and the main moral values and norms in PH area.

Methods

Argument-based systematic reviews have been introduced as a more valid manner than informal or simple reviews to improve ethical decisions in healthcare, health system research or PH policy that resulted in a sound policy-making (Strech and Sofaer 2011). In this study, we act based on the suggested model by Strech and Sofaer for writing systematic reviews of argument-based literature through the following steps:

1. Formulating the research question and eligibility criteria.
2. Searching and screening related literature which meet eligibility criteria.
3. Analyzing and synthesizing data.
4. Extracting and presenting results in line with the research question.

Research question and eligibility criteria

The research question was that which ethical approach should be used in PH policy? More precisely, which ethical principles and moral norms must be taken into consideration to build a framework for ethical evaluation of PH policy and practice?

The eligibility criteria included:

1. A publication, if; it was a peer-reviewed, published academic articles or books; international or national-level reports of official bodies; or PhD theses. Editorials and commentaries are considered to be excluded from the study.
2. A targeting a PH policy or program or intervention, and B. providing a set of moral norms; ethical principles or a theoretical or practical framework for ethical analysis of a PH policy, program or intervention.

Search strategy

A systematic search of literature, in English, with no time limit up to 20 July 2017, was performed using the following keywords in Web of Science (ISI), and PubMed databases and also WorldCat Dissertations, that were selected based on the main terms in the study questions.

PubMed search

("Public health/ethics" [MeSH Terms] OR "public policy/ethics" [MeSH Terms] OR "public health administration/ethics" [MeSH Terms]) NOT "research" [MeSH Terms] AND ("ethics/standards" [MeSH Terms] OR "normative ethics" [MeSH Terms] OR "ethical analysis" [MeSH Terms] OR ethical framework) NOT "clinical trials as topic/ethics" [MeSH Terms] AND "english" [Language].

Web of science search (ISI)

TOPIC: ("public health ethics"*framework) *OR* **TOPIC**: (public health research*health policy) *AND* **TOPIC**: ("ethical framework") *AND* **TOPIC**: (English).

Timespan: All years. **Indexes**: SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH, ESCI.

Totally, 251 papers were retrieved. References retrieved from these two databases were imported into bibliographic software (Endnote X7). Owing to duplication of 28 cases, after removing 14 repeated cases, 237 papers remained and their abstracts were reviewed by two researchers. For paper selection between the two researchers, 79% agreement was found. There was disagreement in 18% of cases that the text of the paper was studied and under the opinion of research supervisor, the agreement reached 100%. In order to ensure complete coverage of ethical frameworks, in addition to 45 selected papers, their references, notes and bibliographies were studied (snow ball search) and 11 relevant papers were added. The Google scholar search engine was used to complete search coverage (Greenhalgh and Peacock 2005).

Finally, the full text of 56 papers that met eligibility criteria was studied and analyzed (Fig. 1).

Results

The 56 PHE frameworks have established some of the moral theories and/or ethical principles and/or some steps for evaluating a PH program/intervention/policy (Table 1). The type of papers included 49 analytic or review articles, five papers of official bodies, and two qualitative studies. According to the study purpose while reviewing the underpinning theory or philosophy of the frameworks, we focused on the fundamental principles and values and practical criteria.

Typology of the PHE frameworks

We categorized the reviewed frameworks into the two groups: theoretical or conceptual which has been presented as a theory or a set of ethical principles or broad norms and practical frameworks which has been discussed on how to apply the ethical principles and moral norms in PH practices or policies. Although, some practical frameworks have outlined certain principles and values, these values have not come along with an overarching moral theory, and they were not attempted to provide a comprehensive philosophical approach, however in part, have been derived from implicit or explicit normative views. Finally, 23 theoretical frameworks and 33 practical frameworks were identified.

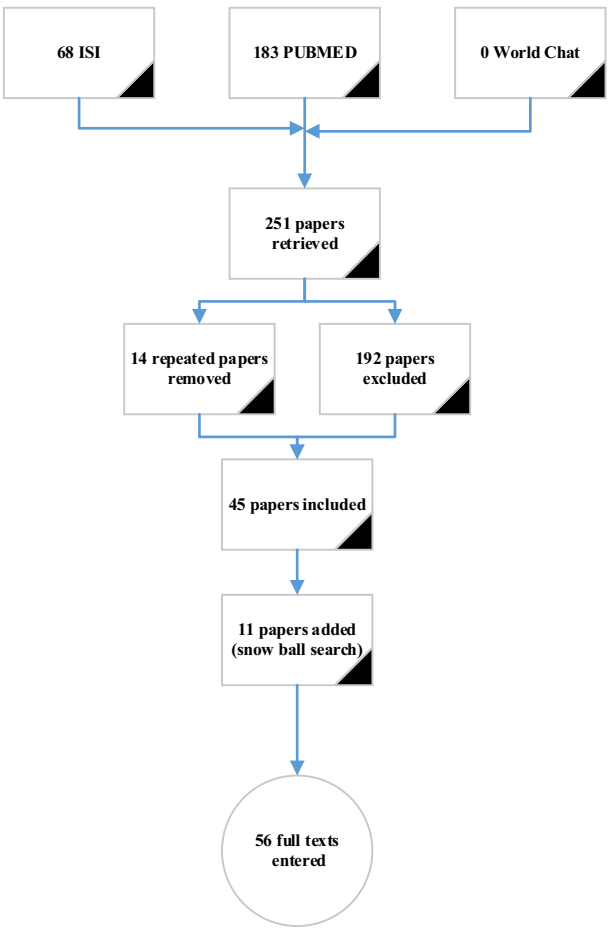

Fig. 1 Flow diagram of systematic search

Underpinning theories and philosophies of PHE

Two main concerns have led to the formation of PHE frameworks; overcoming of the public interests over individual liberty and autonomy, and priority setting and allocation of scarce resources, especially in developing countries, which has risen the discussion of justice. Most of these frameworks had common underpinning assumptions and beliefs. The need to balance between PH moral obligation of preventing harm and health promotion with respect for individual autonomy has been specified so that a clear move of liberal values in biomedical ethics is seen toward the community's collective values in PHE. Some of the scholars have proposed quitting clinical ethics approach because of differences of these two areas (Kass 2001). In 1997, Yan-Guang Wang reported inadequacy of principlism framework, especially for shaping an effective and ethical policy to deter the HIV epidemic in china. He suggested that an improved bioethical framework would include principles of tolerance, autonomy, beneficence, and care for and care about in which tolerance and care should play a key role because of interdependence of humans, although autonomy and care will be in conflict (Wang 1997). Nancy Kass was the first American pioneer on PH thinking who designed a practical framework for PHE, including 6 steps with a target group of the PH authorities than preferably the philosophers. She is one of the first persons who called PH professionals for moral reasoning based on both facts and values. While referring to the inadequacy of biomedical ethics framework to support the needs of PHE, she proposed a framework based on two key values of rights and social justice. By emphasizing positive rights, in addition to negative rights, she pointed out the duty of the state to protect the public from harm and promote PH (Kass 2001).

Childress et al. tried to conceptualize PHE. They investigated the development and effect of different perceptions of the concept of "public" over time, for example, public not only as a numerical population that can be defined and measured, but as a political group defined with obligations, commitments and legal relations, as well as diverse cultural and moral understanding (Childress et al. 2002b). On the other hand, regarding debates raised about priority setting and resource allocation especially in developing countries, ethical frameworks for prioritization in PH institutions have

Table 1 List of the ethical frameworks reviewed and their Philosophy

Row	Related program/policy/intervention	Philosophical under pinning	Row	Related program/policy/intervention	Philosophical under pinning
1	An effective and ethical policy to deter the HIV epidemic (Wang 1997)	Deontological and consequentialist theories Care ethics and contextualism	30	Managing Canada's long-lived radioactive nuclear fuel waste in an ethically responsible manner (Wilding 2012)	Respect for all justice
2	Policy reform based on ethics of resource allocation in developing countries (Jayasinghe et al. 1998)	Egalitarian/accessibility of health care to all human beings (decent minimum)	31	Balancing private and public interest within tobacco policy (Shickle 2009)	Equity
3	Ethics of accountability for reasonableness and legitimacy for managed care plans (Daniels and Sabin 1998)	Just moral authority through democratic deliberative process	32	Responsibility-centered framework for public health interventions (Turoldo 2009)	Standing between the libertarian perspective, and the collectivist point of view
4	An ethical Framework of resource allocation in a Canadian setting (MacDonald 1999)	Universal right to health care	33	Development of public health ethics (Petrini 2010)	Beyond the liberal and Communitarian impasse personalism
5	A policy tool in developing countries for analyzing the overall fairness of health care reforms (Daniels et al. 2000)	Fairness: equality of opportunities	34	An ethical framework for public health intervention (Jaffe and Hope 2010)	Medical research ethics
6	A framework ethics analysis of public health programs (Kass 2001)	Rights theory and social justice	35	The relevance of J.S. Mill's political philosophy for a framework of public health ethics (Powers et al. 2012)	The essential role of self-determination in human well-being
7	Major ethical ideas in discussions of public health policy (Roberts and Reich 2002)	Consequentialism and ethics of care	36	The ethical basis for seven over-arching principles in the light of the emergence of new and future vaccines (Isaacs 2012)	Beneficence Liberty Justice
8	General features of an ethical framework for thinking and resolving conflicts of public health ethics (Childress et al. 2002b)	Prima facie Human rights Presumptivist approach	37	The values and principles of health system, and as a pre-requisite to compilation of Iran's health system reform plan (Rajabi et al. 2013)	Human dignity Right to maximum attainable level of health Comprehensive health Equity and social cohesion
9	Distinctive elements of public health and the related ethical principles (Thomas et al. 2002)	Obligation to care for the well-being of communities and interdependence	38	An ethical framework for facilitating a structured analysis of preventive programs for overweight or obesity (Ten Have et al. 2013)	Health and well-being No harm Liberalism Equality and justice
10	Principles relevant to ethical deliberation in public health (Upshur 2002)	Individual liberty Nondiscrimination Social duty Honesty and truthfulness	39	Ethical criteria among competing values for Food and Beverage Policies (Resnik 2015)	Individual autonomy Personal Responsibility Justice
11	An ethical framework for priority setting in health care institutions (Martin and Singer 2003)	Social justice	40	Ethical concerns of intervening for health behavior change among adolescents identified as overweight (Riiser et al. 2015)	Psychosocial well-being No harm Liberalism Equality and justice The attribution of responsibility for health behavior
12	Tobacco control efforts within an ethical framework (Fox 2005)	Reducing harm and Justice	41	Two basic ethical principles in vaccinations (Verweij and Houweling 2014)	Egalitarianism Utilitarianism Health for promote fair equality of opportunity

Table 1 (continued)

Row	Related program/policy/intervention	Philosophical under pinning	Row	Related program/policy/intervention	Philosophical under pinning
13	Valuable contribution to public health ethics (Rogers 2004)	Virtue theory	42	A revised conception of public health emergencies focused on the capability of individuals (Herington et al. 2014)	Prevention or remove of harm Respect for autonomy
14	An ethical framework for pandemic influenza planning (Thompson et al. 2006)	Maximize benefits and equity Protecting to the risk of public harm	43	A framework of ethical principles often applied in the context of research and explore its applicability to public health practice (Babu et al. 2014)	Societal prescriptions, philosophy, values and religious beliefs
15	Moral foundations of public health and health policy (Powers and Faden 2006)	Social Justice through Achievement to essential dimensions of human wellbeing	44	A Coherent framework for conceptualizing the relationship between justice and autonomy (Buchanan 2015)	Social justice luck egalitarianism Respect for Autonomy Capabilities and well-being theories of justice
16	Ethical issues in pandemic planning (Torda 2006)	Fairness	45	The concept of social responsibility in bioethics (Ahola-Launonen 2015)	Deontology Individualism Utilitarianism Social justice
17	An analytic framework to manage the ethical tensions in public health policy and practice (Baum et al. 2007)	The health and wellbeing of communities	46	The current legal and policy framework as well as the ethics environment, and suggest recommendations for Zambia to fully benefit from the opportunity that genomic research presents (Chanda-Kapata et al. 2015)	Maximizing health benefits and minimizing harm to individuals and populations
18	The ethics of preparedness and other public health plans (Swain et al. 2008)	Social justice Interdependence of health with social and economic factors Fundamentality	47	A framework for web-based interventions for evidence-based decisions about childhood vaccinations (Glanz et al. 2015)	Liberty and respect
19	An assessment framework for the National Immunization Program (Health Council of the Netherlands 2007)	Non-maleficence justice	48	A systematic framework to guide professionals in planning, conducting, and evaluating public health interventions (Marckmann et al. 2015)	Beneficence Non-maleficence Respect for autonomy justice
20	A framework for public health policy across the European Network (Shickle et al. 2006)	Health, well-being and flourishing Interdependencies of communities	49	The important ethical issues associated with the government policies undertaken to combat the infectious outbreak in Singapore (Tiong and Koh 2013)	Protection of the public from harm Duty of care Utilitarianism Liberty
21	Ethical issues of measures and policy for health improvement (Intervention-Ladder) (Nuffield Council On Bioethics 2007)	Liberalism: No harm	50	Health-related HRIA (MacNaughton 2015)	Human rights
22	A consensus ethical framework to guide proposal reforms (Levine et al. 2007)	Justice: universal access and equality of opportunities	51	Ethical issues in public health surveillance (Petrini and Ricciardi 2015)	Balancing between individual and collective interests
23	The function of evidence and ethics in founding policies (Tannahill 2008)	Health promotion, public health and health improvement	52	Biomedical-moral aspects of laws and regulations related to health system in Iran (Abbasi et al. 2015)	Human dignity Life sanctity and soul survival Right to health

Table 1 (continued)

Row	Related program/policy/intervention	Philosophical under pinning	Row	Related program/policy/intervention	Philosophical under pinning
24	Deliberative framework to help frame deliberation with the public or within the health department management team (Bernheim et al. 2007)	Utility Justice Respect	53	Virtue ethics is another framework for public health (Rozier 2016)	Virtue theory
25	A set of basic ethical principles for the field of community health work (Stone and Parham 2007)	Enhance health-related capacities of individuals and their communities	54	Best practices for ethical sharing of individual-level health research data from low- and middle-income settings (Bull et al. 2015)	Equitable, ethical, and efficient sharing of the research-data sharing
26	An alternative approach to health system reform in the United States (Ruger 2008)	Shared health governance paradigm	55	Politico-Moral Foundations of the Iran Health System (Akrami et al. 2017)	Right to health as the state duty Egalitarian theory
27	A public health ethics beyond pandemic planning to embrace the full spectrum of public health responsibilities from poverty, to sanitation, …, to Bioterrorism (Baylis et al. 2008)	Feminist relational theory	56	Fairness and legitimacy of health decision-making conceptualized by Ethiopian health planners (Petricca and Bekele 2017)	Fairness
28	The elements of fairness in priority setting at the macro-, meso- and micro-levels in the Canadian (Ontario), Norwegian and Ugandan health care systems (Kapiriri et al. 2009)	Fairness: accountability for reasonableness			
29	A set of principles for legally and ethically sound public health resource triage decision-making in emergencies (Barnett et al. 2009)	Personal autonomy Community well-being			

emerged based on the philosophy of social justice. In these frameworks, fundamental values are fairness and accountability for reasonableness. They outlined a combined normative and empirical methods based strategy, and the involvement of all beneficiaries and partners in policy decisions that affect the delivery of health care services (Martin and Singer 2003; Daniels 2000, 2008; Daniels and Sabin 1998, 2008; Daniels et al. 2000). For common knowledge about the inadequacy of biomedical ethics to be used in the field of PH community, Baylis et al. presented a theoretical framework of relative morality as a feature of PHE treating public as related social beings (Baylis et al. 2008). This theory which was revised in 2010 by the authors, is based on three fundamental values: relative autonomy, relative social justice and relative solidarity Relative autonomy unlike individual autonomy recognizes connection and relevance of the public in terms of economic, social and political conditions serving autonomy through social changes instead of focusing on better protection of individual freedom. Relative social justice, unlike a focus on non-discrimination and distributive justice (distribution of limited goods), emphasizes fair access to social goods including opportunities, rights and power. Focusing on this aspect of justice requires PH look at moral issues associated with systematic patterns of inequity leading to disadvantages. Finally, relative solidarity, unlike traditional focus on altruism and opposed groups of "us" and "them," emphasizes the inclusion and interaction of "we" (Kenny et al. 2010).

Petrini and Gainottie after reflecting the shortcoming of the principles of biomedical ethics to solve moral dilemmas of public health, considered three common philosophical theories of Communitarianism, Kantian and Utilitarianism in their ethical analysis. Each of these theories were inadequate to be used in PH area and have ignored the key concept of personalism (Petrini and Gainotti 2008). Personalism first in regard to human dignity and second, due to the agency of man as a social being in the construction of the common good through solidarity, has been proposed as a philosophical basis in the health care system (Bielecki and Nieszporska 2016). The primary moral principle in this theory is that all human beings deserve respect. Personalism which originated in health ethics and share common issues with health movement and human rights, emphasizes the protection of the weak and sick, as an inalienable matter and measures moral value as a reflection of others' dignity and well-being. Therefore, it obligates us to make positive efforts. Underpinning values of personalism were extracted from respect for a person, and include autonomy, privacy, justice and equal opportunities in the allocation of health resources. Personalism is a combination of communitarianism (social value and solidarity), and Rawls's views based on the belief that personal goods are the basis of common good (Petrini and Gainotti 2008). However, the communitarians provided little operational guide for the implementation of this approach, but have concluded that considering this theory in answering philosophical questions about the value of human health is very important.

On the contrary, Ahola-Launonen has introduced social responsibility for human health and well-being, and has considered individualism theoretical framework inadequate due to disregarding of social context. He believed that despite authorities act rationally, due to the effect of social determinants of health on chronic diseases related to life style, ethical decisions in health require a social view (Ahola-Launonen 2015). Thus, legitimate and fair decision making issue to priority setting in PH policy led to the formation of the framework of *accountability for reasonableness* (Daniels 2000) that conceptualized differently by health system stakeholders of developing countries (Petricca and Bekele 2017; Kapiriri et al. 2007, 2009).

Some authors based on virtue theory have emphasized the inclusion of moral virtues in underpinning values of PHE. They believe that for the past several decades, the concept of *structure* in theological ethics, almost exclusively, has focused on social structures for the need to change. Structures that continue in unfair situations and cause systematic disadvantages to human development are classified as structures of sin and were the goals of social and theological criticism. PH professionals are trying to create new structures that have a positive effect on the life of individuals and communities. The social structures (i.e. law, policy, and environment) are formed by individual characteristics and virtues as an underpinning value making the person's behaviors and habits, and forming them (Karen and Meagher 2011; Rozier 2016). Finally, some frameworks have turned backwards to human rights foundations, by emphasizing on the universal access to minimum decent health care and balancing the PH benefits of a policy against its human rights burdens (MacNaughton 2015).

Broad and narrow moral norms of public health

The prevention of and protection to harm, and promotion of health benefits were the first broad moral norms that emerged (Table 2). These ethical objectives are placed under the broader principles of beneficence and non-maleficence. PH is a common good that follows the universal principle of beneficence. Some scholars have described no-harm principle that roots in Mill's thinking as the fundamental principle to justify the limitations of individual freedom against harm to others, and considered it as a basis for protecting the health of populations from disease and death (Powers et al. 2012). By identifying three moral goals of PH, including producing benefits, preventing and removing harms, and producing maximal balance of benefits over harms (utility principle), Childress et al. outlined the general moral

Table 2 Broad and narrow types of moral norms

Non-maleficence
Be proportional to the risk of public harm
Protection of the public and society against disease and death
Harm principle
Minimizing harm
Do not harm
Prevention of negative health consequences
Beneficence
Do good
Beneficence
Producing benefits
The common good
Beneficence (subsuming non-maleficence)
Benefit from innovation and desired technology
Health care benefits
Public health benefit
Prevention and health promotion
Protection of the public beneficence
Research benefits relevant to health care
Care
Care for and care about
Caring role for both the caregiver and society
Duty of care
Duty to provide care
Government obligation to meet the basic health needs of all citizens
Principle of utility
Producing maximal balance of benefits over harms and other costs
Population-level utility
Utility of data sharing in publicly funded health research
Outweighing the risks by benefits
Any adverse effects are not sufficient to substantially diminish the benefits
Reducing harms and burdens including limitation of individual autonomy
Be proportional to the risk of public harm proportionality
Employ the least restrictive means
Effectiveness
Evidence based effectiveness
Usefulness
Cost-effectiveness
Cost effectiveness and cost utility
Cost-efficiency
Cost-value
Safety and effectiveness
Effective sharing of individual-level data
Assessing alternative options
Favorable risk–benefit ratio
Feasibility and evidence-based effectiveness
Efficiency
Incremental cost-benefit/cost-effectiveness ratio
Safety of services
Assessing burden of disease, and weighing of risks, benefits and burdens
Respect
Respect for autonomy
Respect for individual rights
Respect through tolerance
Patient and provider autonomy
Respect for professional and civic values
Respect individuals' autonomy and liberty
Equal and substantial respect
Relational autonomy
Liberty to choose
Respect for life in all its forms
Respect for future generations of human beings, other species, and the biosphere as a whole
Respect for peoples and cultures
Respect for life
Self-determination as an essential dimension of well being
Independence
Informed consent
No paternalism
No stigmatization
Respect for social and cultural values
Mutual respect
Protect disabled people from discrimination
Minimizing stigma
Not using of obesity-related stigma
Freedom from discrimination
Respect for persons autonomy
Respect for physical and social environment
Respecting autonomous choices and actions
Respect of community interests
Interventions be applied without discrimination and stigmatization
Confidentiality and privacy
Share personally identifiable health information—with the patients' consent where possible
Protection of privacy and confidentiality
Justice
Justice (across groups, regions, and generations)
Social justice (distributive justice and non distributive justice)
Relational social justice
Distributive justice
Procedural justice
Fairness
Distributive justice
Access/equality
Accessibility of health care to all human beings (decent minimum)/
Access and equality of opportunities
Access to care and to reduce certain social inequities
Equal access
Access to research data

Table 2 (continued)

- Financial barriers to access
- Non-financial barriers to access
- Equal access to high-quality care
- Providing universal and comprehensive coverage
- Access to the healthcare
- Equitable access
- Public access to basic care
- Access to essential services in addition to health
- Equity
- Equity-distributive
- Equitable financing
- Fairly distribute the benefits, burdens, and costs
- Fair distribution of beneficence, e.g. among subgroups
- Fairly selection for participation in health programs (vulnerable individuals)
- Distribution of the intervention's benefits, burdens and risks
- The environment, educational and economic opportunity
- Protection of vulnerable groups
- Prevention of negative health consequences
- Targeting vulnerable, disadvantaged populations

Procedural justice

- Fairness (to everyone affected and particularly to minorities and marginalized groups)
- Fairness and reciprocity in research data-sharing
- Fair decision process
- Fairness and legitimate decision making
- Publicity condition
- Relevance condition
- Appeals condition
- Enforcement condition
- Stakeholder inclusiveness
- Compensation
- Flexibility in the way of important revision and openness with external stakeholders (such as NGO partners)
- Provide supports for those with the duty to care
- Procedural fairness in decision-making
- Fair coverage decisions
- Provide fair compensation for volunteers
- No fault compensation schemes
- Hearing minority views
- Democratic procedures
- Compensation in the event of harm
- Fairness translation of genomic research findings into healthcare
- Compensation
- Equitable participation
- Supporting people affected by adverse effects

Reciprocity

- Ensuring the safety of their workers
- Reciprocal responsibilities
- Fair reciprocity
- Obligations of the healthcare profession and reciprocity

Table 2 (continued)

Empowerment and capacity-building

- Public education
- Informing to make autonomous decisions
- Empowering to make self-determined choices
- Informed choice
- Professional competence
- Competency
- Empowerment and engagement
- Health-related empowerment
- Fostering capabilities, a person's ability to be healthy
- Expanded health agency
- Strengthen the autonomy of the public to promote the capacity, creativity and vitality of citizens
- Creating an environment and structures to facilitate healthy choices
- Flourishing society
- Creating healthy conditions
- Individual capability
- Individual responsibility
- Personal responsibility
- Warning agents of the gravity of risks
- Respectful environment
- Providing of infrastructure for safe and enjoyable physical activity
- Enhancing public understanding
- Training health workers in interpersonal communication skills
- Capability to reasoning
- Capacity to exercise moral autonomy
- Capacity-building interventions
- Expansion of recreational programs
- Improving social structures
- Relationship between agency, moral character and social structure

Solidarity

- Interdependence
- Solidarity
- Relational solidarity

Social responsibility and participation

- Involvement of decision makers and stakeholders
- Community participation
- Community engagement
- Participation of affected populations
- Multi- stakeholder (and community) engagement and deliberation inter-sectoral collaboration
- Work collaboratively to establish practice guidelines
- Inter-sectoral public health
- Contribution to society
- Collective responsibility
- Community agency
- Involvement of parents and other stakeholders

Accountability for reasonableness

- Public accountability for resource allocation at the population-based level

Table 2 (continued)

Accountability
Identify the human, material, financial, information and structural resources that are available, or potentially available
Keeping commitments
Fair and accountable processes
Reasonable decision-making
Public justification
Cultural value and community's consent
Comprehensiveness
Stakeholders responsibilities
Monitor and improve quality
Professional accountability
Stewardship
Integrated stewardship
Consensus-building
Political feasibility
Promise-keeping
Critical reflection
Deliberative decision making
Accessible, transparent, participatory and accountable decision-making processes
Communication and community consent
Community acceptance
Balancing of competing interests and objectives
Assess and evaluate the public health outcomes
Understandability
Representativeness
Monitoring the adverse effects of the program
Controlling the costs
Broad consent
Consistency
Justification
Managing conflicts of interests
Openness for revision
Fiscal predictability and decisions that acknowledge district capacity (organizational justice)
Responsiveness and accountability
Human resources promotion
Excellence and balance
Professional excellence
Transparency
Sustainability
Trust
Public trust
Building community trust
Building and maintaining trust
Take steps to build trust with stakeholders
Trustworthiness
Community trust
Consent and trust
Critical trustworthiness

This table lists all the mentioned moral norms in public health policies and practices

considerations in PH that has been introduced and used as a normative basis (Childress 2015; Childress et al. 2002). The evaluation of the benefits of a program requires a precise definition of the objectives and the expected effects of the program, based on sound data and evidence. Sometimes the expected benefits resulted from reduction of risk. For example, a health program may be designed to increase life expectancy (benefit), aimed to reduce the risk factors for premature deaths.

The principle of utility as a broad norm in PH is defined as the production of maximum balance of benefits of the program on its burdens, including risks, harms, and costs (Childress 2015). Potential harms should be assessed to those who are directly and indirectly affected, and compared with the expected benefits for the target community to determine the maximum benefit. The appropriate actions to manage or minimize the potential risks or inevitable harms is one of the main goals of ethical evaluation.

The other broad norm is respect. Respecting all including self-respect and respect for others is one of the fundamental dimensions of well-being, the adequate level of which is considered necessary to achieve social justice (Powers and Faden 2006). Respect for individual rights and autonomy in most frameworks are emphasized as a right for non-interference (Kass 2001; Childress et al. 2002b; Marckmann et al. 2015; Glanz et al. 2015; Resnik 2015). Lack of observance of the privacy and confidentiality of information, especially in data collection activities and health system research data sharing can bring social and psychological harms to people. Stigma and discrimination are considered as lack of respect (Ten Have et al. 2013). Stigmatization brings about feelings of discrimination and worthlessness, and a sense of identity loss and loosing moral agency, and violates principles of no harm and respect for autonomy. Lee has suggested that PHE requires to interconnect the health of individuals, communities, and environment including other species of life to promote a healthier planet (Lee 2017). Therefore, respect in PH includes also respect for future generations, other species, and the biosphere as a whole.

Regarding the primacy of the public good and the superiority of collective interests on individual interests in PH policy, respect for individual autonomy losses its originality. But the necessity for a PH policy or program should be justified and followed by the minimal infringement of

autonomy, and as such, some scholars have introduced the least restrictions means as a principle. This means that the need for a PH policy or program should be justified with a minimal violation on autonomy. Some scholars have considered six narrow norms of effectiveness, necessity, minimal violation of presumptive values, proportionality, impartiality, and public justification as justificatory conditions for the superiority of norms in conflicting situations (Childress et al. 2002b; Bernheim et al. 2007; Turoldo 2009).

Evidenced-based effectiveness plays a vital role in determining the priority and necessity of a program and its implementation. One of the narrow norms in PH is effectiveness in both financial and non-financial terms. After determining that a proposed compulsory intervention will meet the first three conditions, proportionality requires that restrictions to individual liberty and other conflicting norms should not be exceeded than is necessary to address the level of risk or the need of the community. The sixth condition focuses on the context and resulted in accountability. Context includes specific social, political, and institutional situation in which an action is taken (Childress and Bernheim 2015).

Formal economic analytical methods, including cost-effectiveness and cost-benefit analysis, are used as a way to improve decision-making, especially when balancing is required. The cost-effectiveness analysis and calculation of the QALY index (quality-adjusted life years) is mainly used to manage the financial burdens of the health program in order to balance the program's financial impacts. Cost-value analysis is another formal analysis that considers several factors, including the severity of the disease as a social value. In cost-value analysis, unlike the cost-effectiveness analysis, the severity of the disease after intervention is more important than the duration of healing and there is less discrimination against patients who are less likely to be well-off. In such a way, the evaluation of life-expectancy improvement programs for healthy and disabled people is the same. Also, the latter is more ethical, because it takes into consideration the views of the community about the value produced (Nord 1999). By providing systematic, quantitative, and comparative inputs on health interventions, these methods help to make reasonable decisions and are ethically applicable with some limitations (Childress and Bernheim 2015). Efficiency is one aspect of fairness, since inefficient use of resources and ineffectiveness means that some needs will not be met that could have been that resulted in unaccountability (Daniels et al. 2000).

Fairness itself is a broad norm in PH policy that indicates fair distribution of responsibilities, opportunities, resources, benefits and burdens with special attention to vulnerable groups, equal access to primary services and reduction of avoidable inequalities through action on the social determinants of health (Daniels 2008). Another requirement for fairness is compensation, for example, in particular, in cases in which health care workers sacrifice their life, in addition to their assignments (Marckmann et al. 2015). Regarding the duty of care, the norm of compensatory justice is the translation of the principle of reciprocity in the context of PH.

Although there is no specific definition of justice that is unanimously agreed, the term "social justice" is a broad norm and common term in the field of PH (Hofrichter 2003). Social justice, in addition to the distributive justice and procedural justice (ensuring public participation including all individuals, groups and organizations involved, in decision-making and implementation of the program), requires fostering of individual capabilities, and development of a sufficient level of the dimensions of human well-being including health, personal security, attachment, respect, reasoning, and autonomy and ability to make informed decisions and right choices (Powers and Faden 2006).

The capabilities approach highlights the important considerations in analyzing the relationship between agency and structure that makes the broad norm of empowerment and capacity-building. Healthy lifestyle is influenced by both individual and social factors affecting health, including structural and living conditions (Cockerham 2005). The concept of diseases relevant to lifestyle and individual responsibility play an important role in the discussions of fair allocation of scarce health care resources. But unhealthy behaviors are not related to *mere choice* and can be caused by social conditions and inequalities, so that, don't consider as the breach of solidarity (Prainsack 2013).

The formation of emotional bonds and attachments, as well as a sense of solidarity and cooperation with others are prerequisites for the establishment of a just society. Sociologists consider solidarity as a structural issue, which shows how interpersonal communications and interaction between the various components of a society allows for a collective effort to achieve a common good; In other words, solidarity is considered as a moral foundation (Powers and Faden 2006). Solidarity like justice is a broad norm and fundamental value for success in PH programs (Martin and Singer 2003) and means functions reflecting a collective commitment to carry financial, social, and emotional costs to help others (Prainsack et al. 2011). Corporate social responsibility establishes one of the most important applications of the principle of responsibility. Social responsibility for human health and well-being as an inherent aspect of bioethics is not limited only to the commitment towards themselves and other people, but it is deployed to every creature (animate or inanimate) that is involved in life and human progress (Ahola-Launonen 2015). People should be given opportunity to participate in projects that affect their health and well-being (Turoldo 2009). Therefore, community participation and cooperation is a moral norm in PH context and simply means work with people, rather than on/to people, and is defined as the engagement of community members

in projects. The first level of community participation is to inform community members about the decisions and activities, the second is to consult with them about proposed activities, and the third is to decide with them, and finally, the highest level of engagement is collaboration in which a partnership with the community is formed and the community members work together to achieve PH goals as a common good (Wilcox 1994).

Good governance and stewardship through transparency and accountability ensure trust and cooperative behavior, and pursuit of PH goals in the communities. Respect, empowerment, social responsibility, and participation are linked to intermediate outcomes, and the principle of accountability (Tannahill 2008). A fair process allows us to agree on what is legitimate and fair and requires publicity of logical reasons involved in the decision-making. As a common deliberative goal, fair-minded people who seek for mutual justified areas of cooperation must come to an agreement that the logical reasons and evidences are fairly related to meeting health care needs of the society. The principle of transparency requires the involvement of beneficiaries in decision-making, as well as accountable and transparent process, irrespective of the particular interests of individuals and groups. Although, key elements of transparency, relevancy, openness for revision, and regulation to ensure that these conditions are met (regulatory condition) in light of the challenges together have been described to ensure the broad norm of accountability for reasonableness (Daniels 2000). Given the differences in context and the scarcity of resources in developing countries, the concepts reported for responsive prioritizing in health systems at developing countries are involvement and consensus among different stakeholders with different levels of knowledge, skill and expertise, prediction of related financial costs, transparency, flexibility through openness to review with external stakeholders such as NGOs, and evidence-based and needs-based planning, in line with national and international policies based on regional capacity and organizational excellence (Petricca and Bekele 2017; Kapiriri et al. 2007, 2009). Furthermore, consistency, participation and management of conflicts of interests, sustainability, comprehensiveness, and monitoring and evaluation are the other narrow norms provided to ensure accountability (Marckmann et al. 2015).

Commonalities among the frameworks

First, using a common scientific and deliberative approach for ethical decision-making in PH plans or interventions has been recommended (Kass 2001; Ruger 2008; Petrini 2010; Carter et al. 2011; Martin and Singer 2003). Ruger has proposed a shared health governance approach in which all individuals, service providers and institutions play a vital role in creating a healthy environment and achieving PH goals through participation and collaboration (Ruger 2008).

Second, although there is still no common PH moral theory, but in many of these frameworks, fundamental values and underlying assumptions and beliefs are common and the need to balance respect for individual autonomy has been mentioned with moral obligation to prevent harm and promote the community health as the classic goal of PH. Thus, a clear shift is seen from the values of liberalism in biomedical ethics to the community's collective values. Most of the frameworks considered traditional principles of biomedical ethics inadequate for responding to moral issues in PH. Considering human as a social being with respectable common needs requires social justice approach. Therefore, ethics in PH practice require flourish and strengthen the public autonomy to promote capacity, creativity and vitality of citizens as members of a community (Shickle 2009). MacNaughton in his study emphasizing the use of the method of balancing PH benefits on human rights burdens, has noted Human Rights Impact Assessment framework progress and challenges remaining in the last 20 years (MacNaughton 2015). Some have argued that PH should embrace the framework of human rights, because PH and human rights have a common goal of promoting human flourishing (Annas and Mariner 2016).

Third, in most of the frameworks, common values and norms have been emphasized; collective values and norms such as producing utility, fairness, distributive justice, health equity and reducing social inequalities, solidarity, community empowerment and participation, transparency, accountability, and trust have been added to the implications of protecting of and promoting the population health, and respect for autonomy. Various norms used in different frameworks signify the same concepts, although some of them have not defined applied principles properly, meanwhile the presence of a practical guide for decision-making by practitioners is of special importance. For example, the concept of solidarity in PH should be defined as operational. This term is simply not just an abstract concept meaning altruism. At the normative level, solidarity has a function as a measure of assessing the quality of human relations and is a moral concept (political and social) that is limited to the institutional organization of the community. Solidarity reflects functions of a collective commitment to carry the costs (financial, social, and emotional) to help others (Prainsack et al. 2011).

Fourth, specifying and balancing ethical considerations in PH are important and done in three ways: making principles and rules and its derivatives (broad and narrow norms), reducing ambiguity and abstraction in these norms and presenting them as a guide for action. Given that mid-level principles are based on common morality and lacks a common moral theory, however, ethical decision-making in PH is possible by using them with regard to the urgent need

for PHE practical framework (Coughlin 2008). Childress and Bernheim have introduced a presumptivist framework as the best way to formulate relative weight and strength of conflicting moral norms of PH in a democratic, liberal, and pluralist community. They believe that the assumptions emerged from the main values of a community through the emergence in the constitution, laws, policies and practices, as well as myths and beliefs, all make the public philosophy of the community. Without certainty, they made and should make the criteria of PH interventions. A presumptivist framework places deniable assumptions for concepts and interventions and identifies their denial conditions. Hence, defects caused by two absolutist and contextualist approaches are prevented. On the contrary, it is clearly uncertain, because depending on the situation, individual autonomy or public benefit, each could be prioritized (Childress et al. 2002b; Childress 2015).

And finally, practical frameworks beside a systematic approach, in addition to introducing normative standards and evaluation steps, have proposed procedural conditions for a fair decision-making process and ensuring *accountability for reasonableness* (Baylis et al. 2008; Thompson et al. 2006; Torda 2006; Marckmann et al. 2015; Ten Have et al. 2013).

Discussion

Over one decade of adopting the APHA public health code of ethics has elapsed. The code of PHE was made by votes in 2002 under the leadership of PH composed of representatives of several organizations. The goal was to highlight moral principles that follow from PH characteristics for related institutions. The presence of several moral principles as the code infrastructure is a fundamental belief in the interdependence of humans as essence of the community. This belief is expressed not only in PH efforts to ensure the health of all communities, but also in recognition of the inseparable link between individual health and collective life (Thomas et al. 2002). Although ethical principles in the code provide a useful guide for practical PH decisions, but what the code says does not adequately meet the public justification for PH policies and actions (Childress 2015).

On the other hand, the phenomenon of globalization and its challenges has led to interdependency of countries in political, economic and environmental aspects and its impact on the health and well-being of humans. Climate change has directly and indirectly affected human health. Climate change has affected the risk and distribution of vector-borne, food-borne and water-borne diseases and also emerging infectious diseases such as Ebola. Managing these changes has produced new ethical challenges such as increasing costs, priority setting, and protecting vulnerable populations. For this reason, scientists, clinicians and PH professionals have been called to address the practical and ethical aspects of climate change, and health systems need to prevent and manage these effects on population health. At the same time, the need for multiple and multi-setting strategies by other sectors other than health, such as transportation, industry and agriculture, the health impact assessment to identify solutions to reduce the causal agents of climate change and control its health risks, requires inter-sectoral collaboration and community participation (Menne and Bertollini 2005). The issues of susceptibility of some of the sub-populations, access and climate change, and attention to root causes highlight the role of social determinants on health outcomes and health equity. Therefore, although the first code has referred to addressing of the underlying causes of the disease to prevent undesirable health outcomes, issues such as access to care and climate change have created a sense of need to update it (McGill 2015).

Since climate change poses significant global and intergenerational ethical challenges as well as socio-economic burdens and health equity, according to APHA Policy Statement, the new code should guide public health professionals for the advocacy for action, especially among policymakers and other related sectors, prevention and preparedness, education and also conduct research on climate change and health (APHA 2015). Regarding the 2017 them: *creating the healthiest nation*, APHA Annual Meeting has marked *the Climate Change and Health* as cornerstone of the year and explained that "everyone has the opportunity to prepare for, protect their families from, and rebuild after a climate event". In addition to targeting the health of the populations, the statement addresses the reduction of health inequalities by focusing on vulnerable groups, such as children, adolescents, and pregnant women, the elderly and marginalized groups (APHA 2017). The process of revising and drafting the new code has now begun, and the important goal of this process is to articulate common values that conduct and improve public health, promote human flourishing based on human rights framework and achieve global justice (Lee et al. 2016).

Conclusion

Our review shows that a wide diversity of theories has been suggested for PHE. Finding a common approach to address ethical issues in PH policy requires the convergence of underpinning theories and philosophies of PHE. However, some practical frameworks have outlined certain moral principles and values, even if these values are not accompanied by an overarching moral theory. The evolution of PHE frameworks signifies turning to the collective values and more specified norms such as utility, evidence-based effectiveness, distributive justice and fairness, solidarity and social responsibility, community empowerment

and participation, transparency, accountability and trust that some of them can be considered as mid-level principles. In addition to distributive justice, what should be considered in developing a PHE framework is considering the achievement of well-being dimensions adequately signifies developing healthy social structures, promoting individual capabilities, developing ability to reasoning and strengthening autonomy based on the theory of social justice.

PHE practical nature requires that we use the aforementioned moral norms through an ethical framework as an ethical guide for action in the PH policy. The validity of this process requires a systematic approach including procedural conditions. Legitimate and fair decision making process requires opportunities to challenge and review decisions in light of a variety of all beneficiaries' considerations including lay members. It allows fair decisions under resource constraints and also facilitates social learning regarding restrictions and links decision-making in health care institutions to wider democratic deliberative processes. Transparency in all aspects leads to strengthening of accountability to communities and their solidarity and trust as a basis for support and sustainability of PH programs.

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