ORIGINAL RESEARCH

DEFINING CLINICAL PUBLIC HEALTH

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ABSTRACT

Purpose: To solve complex health issues, an innovative and multidisciplinary framework is necessary. The Clinical Public Health (CPH) Division was established at the University of Toronto (UofT), Canada to foster integration of primary care, preventive medicine and public health in education, practice and research. To better understand how the construct of CPH might be applied, we surveyed clinicians, researchers and public health professionals affiliated with the CPH Division to assess their understanding of the CPH concept and its utility in fostering broad collaboration.

Methods: A two-wave anonymous survey of the active faculty of the CPH Division, UofT was conducted across Canada. Wave 1 participants (n = 187; 2016) were asked to define CPH, while Wave 2 participants (n = 192; 2017) were provided a synthesis of Wave 1 results and asked to rank each definition. Both waves were asked about the need for a common definition, and to comment on CPH.

Results: Response rates for the first and second waves were 25% and 22%, respectively. Of the six definitions of CPH from Wave 1, "the intersection of clinical practice and public health," was most highly ranked by Wave 2 participants. Positive perceptions of CPH included multidisciplinary collaboration, new fields and insights, forward thinking and innovation. Negative perceptions included CPH being a confusing term, too narrow in scope or too clinical.

Conclusion: The concept of Clinical Public Health can foster multidisciplinary collaboration to address complex health issues because it provides a useful framework for bringing together key disciplines and diverse professional specialties.

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INTRODUCTION

The traditional silos of research, policy, clinical care and education make it difficult to tackle complex health issues. To adequately address these health issues, a multidisciplinary approach [1] that includes close collaboration of clinical medicine with public health and other disciplines is needed; this can produce meaningful solutions through aligned policy, education, research, health services and training of the next generation of health and human service personnel.

In 2012, the Interdisciplinary Division that was created in the Dalla Lana School of Public Health at the University of Toronto (UofT), Canada, as a home for several graduate and postgraduate programs and to foster interdisciplinary teaching and research, was renamed the Clinical Public Health Division. The renaming was a key strategy to encourage greater collaborative links with clinicians (physicians, nurses, nutritionists, pharmacists and other allied health professionals) across the university's health sciences departments who also were engaged in public health. The Division defined Clinical Public Health (CPH) as "the integration of primary care, preventive medicine & public health" [2].

The term CPH is believed to have been coined in the 1970s [3] to describe a multidisciplinary approach to tackle complex health problems. In 2014, the George Washington University School of Medicine & Health Sciences, USA, established a Clinical Public Health curriculum for undergraduate medical students "to integrate public health and population health" [4]. The University of South Carolina Arnold School of Public Health, USA, created an Office of Clinical Public Health "dedicated to advancing population health through the integration of public health with clinical medicine, nursing, pharmacy and other health related disciplines" [5]. Although the term is growing in common use, there is no generally accepted definition or understanding of what the term means, much less an understanding of how the various disciplines involved effectively work together.

The objective of this study was to explore the definition and understanding of CPH among a diverse group of clinicians and public health professionals with the aim of conceptualizing, informing and operationalizing a working model of this term. Development of a better understanding of the term could facilitate addressing common health goals through collaborative efforts in research, practice and education.

METHODS

An investigation team of UofT CPH Division faculty developed the study protocol and survey instruments and conducted pretests. The UofT Research Ethics Board approval was obtained.

Design

The study was a two-wave anonymous online opinion survey, which used an iterative process to build group consensus and to identify themes [6-7]. Findings from Wave 1 were summarized and provided to participants of Wave 2.

Participants

Participants, including the investigative team, were recruited from the active faculty list of the CPH Division at the time of each survey.

Surveys

The Wave 1 survey, circulated to all faculty (n = 187) in 2016 using SurveyMonkey [8], collected the following: demographic information; opinions on the definition and justification/rationale of CPH; advantages, disadvantages, strengths and weaknesses of a common definition; willingness to participate in future research; and other comments. The survey remained open for six weeks, with three reminder emails sent.

Wave 1 participants' definitions of CPH, along with their justifications, were compiled and interpreted to identify common elements, with definitions consolidated into a set of distinct definitions and accompanying schematics for the Wave 2 survey. The Wave 2 survey, circulated to all current faculty (n = 192) in 2017, included the following: demographic information; numerical ranking and justification of the six proposed definitions; pros and cons of a common definition; suggestions for collaborative CPH activities; and other comments. The survey remained open for eight weeks, with two reminder emails sent.

Data analysis

Summary statistics were used to describe the participant responses to each survey. Narrative responses were grouped into common themes. A weighted average score was calculated from the rankings for each of the six definitions of CPH in Wave 2, using weights from the ranking applied in reverse [9]. Thus, the definition with the highest score was the most preferred.

RESULTS

Of the 47 of 187 (25%) faculty members of the CPH Division who responded to Wave 1, most had a Master's degree (66%), MD (55%) or PhD (51%), with 21% indicating other professional designations. Participants represented >25 disciplines ranging from bioethics and business administration to occupational medicine, primary care and specialist medicine, psychology and urban health. Academia (or research) (48%) was the most frequent af-

filiation, followed by clinical practice (14%), government (10%) and local public health (10%). Wave 2 participants included 42 of 192 (22%) registered faculty members and were similar to participants in Wave 1 in terms of degrees held, affiliations and fields of training.

Definitions of Clinical Public Health (CPH)

Thirty-three Wave 1 participants provided definitions of CPH. Their responses were synthesized into six definitions (with endorsement rates shown in parentheses): 1) CPH is the intersection of Clinical Practice and Public Health (33%); 2) CPH is a new discipline that is neither Clinical Practice nor Public Health but relates to many sectors in Clinical Practice and Public Health (18%); 3) CPH is a subset of Public Health (18%); 4) CPH does not exist because Clinical Practice and Public Health have nothing in common (12%); 5) CPH is the intersection of Primary Care, Preventive Medicine and Public Health (9%); and 6) CPH is a subset of Clinical Practice (9%).

These six definitions each illustrated with a Venn diagram (Figure 1) were provided to Wave 2 participants who ranked them from most to least preferred. As shown in Figure 1, “CPH as the intersection of Clinical Practice and Public Health” was ranked highest while “CPH does not exist” received the lowest ranking score.

Positive and negative aspects of CPH

Open-ended responses regarding positive aspects of CPH were combined into the following themes (with endorsement rates from Wave 1 and Wave 2 participants shown in parentheses): encourages interdisciplinary collaboration (44%, 31%), defines a new field (31%, 19%), promotes forward thinking (28%, 19%), provides new insights (19%, 12%), facilitates innovation (6%, 4%), no positive aspects (0%, 8%).

Synthesis of negative aspects of CPH identified the following (with endorsement rates from Waves 1 and 2 shown in parentheses): term could cause confusion (52%, 50%), is too narrow in scope (39%, 12%), is too clinical (35%, 19%), could detract from a focus on public health (16%, 15%), is not inclusive enough (16%, 0%), is too inclusive (13%, 23%), and has no negative aspects (10%, 15%).

Opportunities and threats of CPH (asked only in Wave 1)

Participants (n = 22) suggested the following opportunities related to the use of the term CPH: addresses non-traditional public health issues; tackles socially-based health problems; advances new approaches to health care challenges; raises profile of public health; facilitates merging of disciplines; enhances investment and divestment opportunities; provides a space for non-traditional public health professionals. Threats

FIGURE 1.
RANKING OF VENN DIAGRAMS ILLUSTRATING SIX GROUPS OF DEFINITIONS OF CLINICAL PUBLIC HEALTH BY PARTICIPANTS IN THE WAVE 2 SURVEY (N=37).

Venn diagram number, label and description	Venn diagram	Score*
<p>No. 1. Clinical Public Health is the intersection of Clinical Practice and Public Health</p> <p>Clinical Public Health is the range of activities and applications that are at the intersection or interface of Clinical Practice and Public Health, where the approaches of public health and clinical care converge, to inform policy and practice and improve individual and population health.</p>		5.49
<p>No. 2. Clinical Public Health is the intersection of Primary Care, Preventive Medicine and Public Health</p> <p>Clinical Public Health is an interdisciplinary field that connects stakeholders in Primary Care, Preventive Medicine and Public Health in order to promote best care practices, education, research and advocacy, and to close gaps and inequalities in health care.</p>		4.42

Venn diagram number, label and description	Venn diagram	Score*
<p>No. 3. Clinical Public Health is a new discipline that is neither Clinical Practice nor Public Health but relates to many sectors in Clinical Practice and Public Health</p> <p>Clinical Public Health is a new discipline (an entity in its own right) which is a hub that connects to a variety of other sectors (multiple collaborating partners from different disciplines), to process and analyze inputs from these sectors, and to provide feedback to various sectors on suggestions and next steps on research, practice and advocacy.</p>		3.64
<p>No. 4. Clinical Public Health is a subset of Public Health</p> <p>Clinical Public Health is the subset of Public Health activities undertaken by clinicians in the health care sector to improve individual and population health that include but are not limited to prevention, health promotion, and disease surveillance.</p>		3.39
<p>No. 5. Clinical Public Health is a subset of Clinical Practice</p> <p>Clinical Public Health is the subset of Clinical Practice undertaken by public health professionals and others to improve individual and public health.</p>		2.78
<p>No. 6. Clinical Public Health does not exist because Clinical Practice and Public Health have nothing in common</p> <p>Clinical Public Health cannot be defined, since Clinical Practice and Public Health are separate and non-intersecting disciplines.</p>		1.41

* Score is the average ranking for each answer choice, calculated by SurveyMonkey for ranking questions [9]. The average ranking is calculated by a weighted average using weights applied in reverse. The answer with the highest score is the most preferred.

identified by participants (n = 18) included: excludes potential collaborators; de-emphasizes the role of non-clinical work in public health; becomes counterproductive if the definition is too focused or too broad.

Possible collaborative projects as part of CPH (asked only in Wave 2)

Suggested collaborative projects and approaches that

could be undertaken as part of CPH were: 1) addressing problems that require a multidisciplinary collaboration and a broad systems approach; 2) developing enhanced methods for collaboration of clinical practice and public health; 3) developing and utilizing/uptake of policies and guidelines; 4) developing more patient-focused projects; 5) initiating research on screening; and 6) thinking outside the box.

DISCUSSION

There appears to be little or no published literature on the meaning of Clinical Public Health, a niche discipline that may be growing in importance, especially after our experience with pandemics. The results of our survey of faculty members of the UofT CPH Division suggest that the term CPH encompasses a concept and approach that could enhance collaboration to solve complex health issues. We acknowledge our results are preliminary because of a low response rate to the surveys.

Survey participants proposed various definitions of CPH with most involving collaboration of different disciplines. As shown in Figure 1, the most popular definition of CPH is the intersection of two multidisciplinary professional programs, clinical practice and public health, suggesting an equal collaboration of clinical practice and public health in the sense that neither is subsumed under the other. Although some found the term confusing, with some suggesting that it is “too narrow in scope” or even that clinical practice and public health “have nothing in common”, the majority saw the concept as positive and forward-looking. Nevertheless, the confusion about the term and lack of endorsement by some participants suggests a need for further evolution of CPH as an approach.

Survey responses identified the term CPH as a way to encourage collaboration to advance health of populations. Joint disciplinary approaches by the integration of two or more disciplines may sometimes establish a new discipline such as biochemistry when biology and chemistry are merged [1]. However, rather than being perceived as a new discipline [10], CPH appears to be seen as a way to encourage collaboration of the two groups of professionals interested in advancing the health of populations.

Survey participants provided numerous suggested areas where clinical and public health practitioners could work jointly to tackle challenging health care issues, with CPH seen as a useful heuristic for healthcare across the lifespan. Autoimmune disease is one example where CPH could identify a clinical problem to be addressed, outline the various known contributing factors and take a multidisciplinary and collaborative approach to decrease suffering and reduce healthcare costs [11]. Specifically, a collaborative effort among public health professionals, clinicians and researchers during a *Salmonella* outbreak led to a large study linking arthritis and salmonella infection [12]. Subsequent case-control studies revealed that a variant in toll-like receptor 2 (TLR-2) was a risk factor in acute reactive arthritis, which expanded knowledge on the role of microbiomes and chronic diseases [13].

Many public health issues, such as HIV, obesity, physical activity, substance use, immunization, cancer screening, outbreak investigation and non-communicable disease surveillance, require a multidisciplinary approach and collaboration between clinicians and non-clinicians. It is compelling that these public health issues often cluster geographically and demographically, worsen the prognosis of those with other health issues and have shared social [14] and commercial [15] determinants. Therefore, these complex problems require a multidisciplinary approach to problem solving that aligns both clinical and public health approaches [16]. Future research investments in solving complex problems and advancing the health of populations would likely benefit from collaborative approaches, such as CPH, which by virtue of integrating professionals and researchers from across various disciplines and sectors, can generate innovative solutions that cross various disciplinary and organizational boundaries [17].

Our study had several limitations. Because the two surveys were undertaken in different years (Wave 1 in 2016 and Wave 2 in 2017), there was probably some, but not total, overlap in participants in the two surveys. Furthermore, those that participated in the Wave 2 survey may not have the opportunity to have learned from participating in the Wave 1 survey. Finally, due to the low response, and therefore small sample size, the degree of generalizability beyond the study setting cannot be assumed.

CONCLUSION

Clinical Public Health was commonly viewed as a concept of multidisciplinary collaboration that can yield important and innovative approaches to addressing complex health problems. A university CPH department or division can be a unique enabler for the promotion of collaboration between members with disparate backgrounds. However, work is needed to achieve a consensus definition of CPH and to engage faculty members to reach a common understanding of the purpose of such a division, while fostering innovative approaches to problem solving. Clinical and public health leaders need to consider the potential benefits of such divisions in academic settings. The findings of this study provide a starting point for putting differing perspectives on the table, identifying new opportunities to collaborate and cross disciplinary boundaries, and encouraging open discussion and further debate.

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CONTRIBUTORS

BCKC, BP and RU conceptualized the design and initiated the project. BCKC and BP developed and implemented the methodology of the project. RU provided the sampling frame for the surveys. BP provided technical support to launch the online surveys and acquire data. All authors participated in the design of the survey instruments, analysis of data collected, and interpretation of the findings. All authors were involved in the drafting of various sections of the manuscript, critically revised different versions, approved the final version, and are accountable for all aspects of the project. No medical writer or editor was hired for the project.

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