RESEARCH ARTICLE

Using participatory curriculum development for Barangay Health Workers in a local community: A pilot study

Cecil Margarette E. Pangilinan-Behino[1] and Michael P. Sy[2]*

Corresponding author's email address: pangilinancme@gmail.com

[1]*Western Pacific Regional Office, World Health Organization, United Nations Ave., Ermita, Manila 1000, Philippines*
[2]*National Teacher Training Center for the Health Professions, University of the Philippines Manila, Padre Faura St., Ermita, Manila 1000, Philippines*

ABSTRACT

Background and Objectives: Reforms in health professions education in the past decade entails the development of effective curricula that impact and improve health outcomes. Along with health professionals, *barangay* health workers (BHW) are not spared from experiencing curricular mishaps when they undergo trainings for community health work. This article described the process of a participatory approach in curriculum development for BHWs in a local community in the Ilocos Region.

Methodology: An exploratory sequential mixed method design was used for this pilot study. The method was framed from six (out of ten) steps in the Research and Development Cycle; these steps were categorized in three phases: 1) needs assessment, 2) participatory curriculum development, and 3) implementation of the curriculum and evaluation.

Results: Our findings yielded both qualitative (Phases 1 and 2) and quantitative (Phase 3) data which were analyzed separately and sequentially. Phase 1 revealed findings based on the strengths, weaknesses, opportunities, and threats found in the community's health care context which were used to determine the four potential training topics to develop a curriculum. Phase 2 generated a curriculum on *hilot* wellness through the participation of the local government and curriculum experts. Phase 3 produced evaluative data on the reaction, learning, and behavior of BHWs towards the implemented curriculum on *hilot* wellness.

Conclusion: The participatory curriculum development process entailed the generation and analysis of data from the community that produces a curriculum for the community. This curriculum does not only offer sustainable and longitudinal health care services but is sensitive to the values and culture of the community while considering the notion that learning it not linear. This article demonstrated that a participatory approach in curriculum development within health professions education can be pursued to address the ever-changing healthcare needs of local communities.

Keywords: *curriculum, health workforce, community health services, health personnel, public health*

Introduction

Healthcare curricula have long been developed largely by educators in adherence to the standards set by governmental and accrediting bodies that monitor quality, delivery, and outcomes of educational programs. While we are grateful to these concerted efforts, the World Health Organization [1] emphasized the need to reform health professions education and training to strengthen national health systems and therefore improve population health outcomes. Reforms in health professions education entail a lot of processes including sustainable leadership, changing perspectives, changing work styles, and good relationships between all stakeholders [2]. In other words, to address the daunting health challenges of our times, a participatory action is necessary to achieve equitable progress in health professions education [2].

Traditionally, "curriculum" was defined as the "subject matter to be taught by teachers" and "all learning

opportunities provided by the school" [3]. In health professions education, a curriculum is further defined as a congregation of courses framed by essential competencies (*i.e.*, knowledge, skills, and attitudes) that, when acquired, produce an entry-level health professional [1]. The elements of a curriculum are needs assessment, curricular objectives, curricular strategies, and curricular evaluation [4]. These curricular elements are akin to the ten major steps in the Research and Development Cycle (RDC), a cyclical process in educational research used to develop and validate educational products such as a curriculum [5]. An effective curriculum meets the needs and current demands of the culture, society, and population where it is implemented and focuses on the quality of the curricular processes rather than merely the quantity of inputs and outputs [6]. While almost all countries, including the Philippines, are making shared efforts in moving towards making health professions education more outcomes-based [8], the education of health professionals continue to remain burdened with curricular rigidities, professional silos, static pedagogy (*i.e.*, lack of knowledge and skills in the science of teaching and andragogy), insufficient adaptation to local contexts, and commercialism in the professions [2]. These problems are galvanized by local issues in higher education including the politicization of higher education, dearth of highly skilled manpower with master's and doctorate degrees, lack of innovation systems, budgetary constraints, and slow research production [9].

Apart from the aforementioned issues in higher education, shortage of health professionals remains evident in spite of the incentives provided to them by the government [10]. To address this, the "Barangay Health Worker (BHW) Act of 2010" [11] was passed to:

> *"[...] make essential goods, health and other social services available to all the people at affordable cost. Toward this end, the State shall ensure that accessible and quality health services are extended to each individual through the barangay health workers as the primary channel for implementing the State's health policies down to the barangay level. Thus, to secure the availability and delivery of barangay health needs, the State shall guarantee the appointment of a health worker in every barangay as frontline health worker."*

In the Philippines, a BHW is a person who has undergone training programs under any accredited government and non-government organization. A BHW voluntarily renders primary health care services in the community in accordance with the guidelines promulgated by the Civil Service Commission (CSC) [12]. Moreover, a BHW is not a licensed health professional but is a health aide that renders preventive, community-based, and primary care to the people living in the local community.

Being trained to qualify for a health-related role in the community does not spare BHWs from experiencing curricular mishaps *i.e.*, participating and enrolling in a program or course that either does not equip them to address the immediate health needs of the community or is imposed to them. With the wide range of roles expected from BHWs, there is a need to ensure that they receive training programs that are relevant, community-sensitive, up-to-date, and provides them with a "sense of ownership" [13]. To strengthen curriculum ownership, Taylor [7,14] proposed a "Participatory Curriculum Development" (PCD) process where educators, learners, and stakeholders co-create a curriculum underpinned by the following principles: participation is both a means and an end, marginalized stakeholder gain the right to take part in the decision-making process in teaching and learning, education will help in reducing poverty and social injustice, and participation among stakeholders may take place throughout the curriculum development process [14]. A PCD process espouses the co-creation of a health science curriculum that is contemporary, evidence-based, and reflective of "real-world" practice by end-users and all stakeholders [15]. Local literature has revealed that the PCD process has only been applied to agriculture education [16] and teacher education [17], but not in health professions education.

This article aimed to describe the process of curriculum development using a participatory approach for BHWs in a local community in the Ilocos Region. Specifically, the pilot study 1) described the needs of BHWs in terms of training, 2) developed a curriculum for BHWs, 3) implemented the generated curriculum, and 4) evaluated the implemented curriculum.

Methodology

An exploratory sequential mixed methods design was used framed from the Research and Development Cycle (RDC) [5]. In principle, this specific mixed methods design begins by exploring with qualitative data and analysis and then uses the findings in the next phase of quantitative data gathering and analysis [18]. For instance, this study collected qualitative data from documents review and focus

groups in order to inform the curriculum designed by experts via the PCD process. These qualitative data were extracted and analyzed to build on evaluation tools, guided by Kirkpatrick's Training Evaluation Model (KTEM) [19], that was administered to a sample population yielding quantitative data and analysis.

Framed by the RDC, only six steps (out of ten) within the cycle were employed in this pilot study. These six steps were categorized into three phases that was paralleled to the processes within the PCD which guided the entirety of this pilot study. For the evaluation part, only Levels 1 to 3 of KTEM were included namely, reaction, learning, and behavior; results (Level 4) which measures the impact of the training was excluded. For the purpose of uniformity and consistency, the three-phase process was used to frame how methods, results, and discussion were written in this article. The methodological framework depicting how these three concepts—RDC, PCD, and KTEM—were integrated is illustrated in Figure 1.

RDC was deemed the most appropriate design for this study because it is specific to educational research and it involves an iterative process of co-creating an educational product (*i.e.*, a curriculum) by stakeholders based on their needs. This section outlined the participant selection, data collection and analysis procedures, and ethical considerations. The phases of the PCD and their indicators used in the study are summarized in Table 1.

Participant selection

For the pilot study, different sets of participants were selected across the three-phase process. This local community was selected because it only has one government hospital with inadequate manpower. Within this community, there is one *barangay* health center manned by a midwife and five BHWs. Moreover, this community expressed their willingness to cooperate in order to help them recognize their health and training needs. The findings and discussion in this article intend to offer health professions educators the process on how to design a health professions education curriculum that is evidence-based, sustainable, participatory, culturally sensitive, and learning-centered. The sub-headings described who were directly involved per phase.

Phase 1: BHWs, local government unit (LGU) staff members, and household representatives. For the needs assessment phase, participants included appointed BHWs *(n=5)* who were residents of the *barangay* for at least five consecutive years were included. They differed in years of

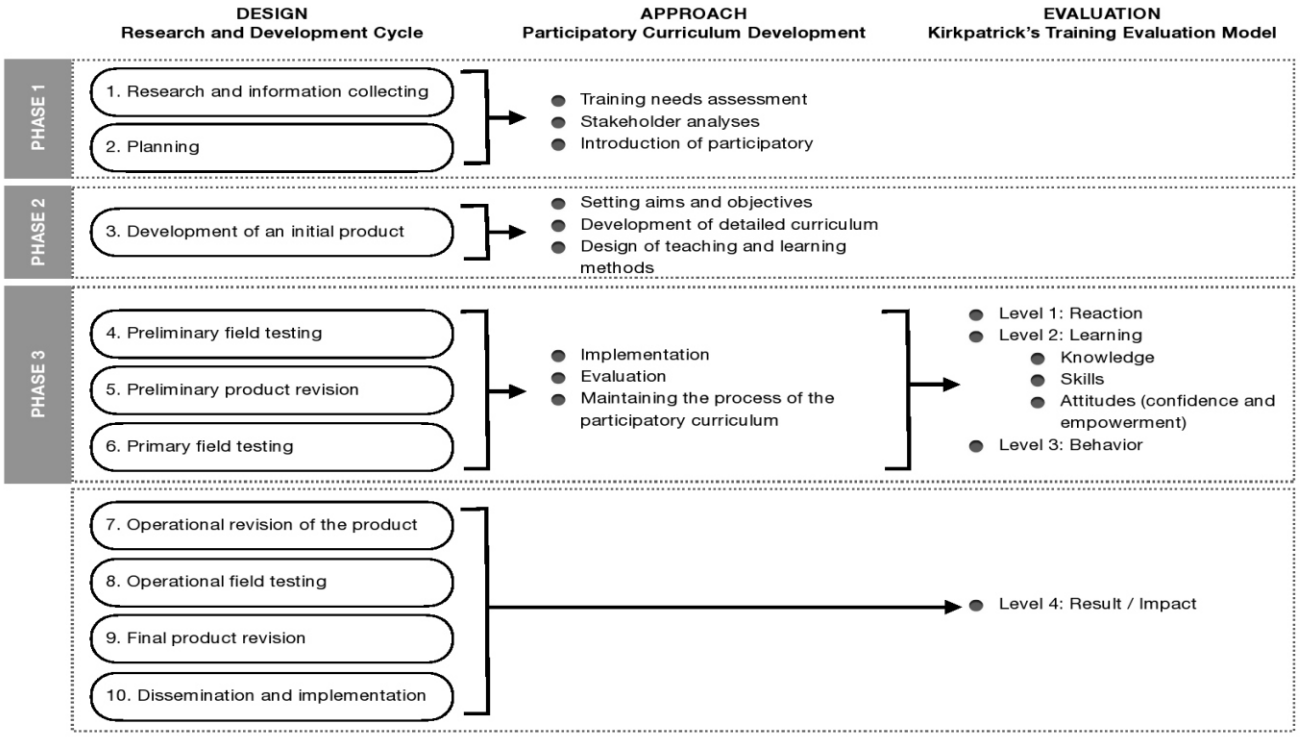

Figure 1. *Methodological framework depicting the intersection between the Research Development Cycle, Participatory Curriculum Development and Kirkpatrick's Training Evaluation Model in the three-phase pilot study*

Table 1. *Summary of the phases indicating the steps of participatory curriculum approach and their indicators*

Steps of Participatory Curriculum Development	Indicators of Stakeholder Participation	People/Group Involved	Type of data collected
Phase 1: Needs Assessment Phase			
Introduction of Participatory Curriculum Approach	Introduction and explanation given to LGU through letter and to BHWs and household representatives through informal discussion	LGU BHW Household Representatives	
Stakeholder Analysis	Conducted with the LGU The identified stakeholders were the BHWs, household representatives and LGU members to include the Chairman and Mayor	LGU	
Training Needs Assessment	Three different sessions of Focus Group Discussion were made among the identified stakeholders	LGU BHW Household Representatives	Qualitative
Phase 2: Curriculum Development			
Setting Aims and Objectives	Objectives were set and revised by curriculum experts Objectives were presented to the LGU	Curriculum Experts LGU	Qualitative
Develop Detailed Curriculum	LGU provided a trainer from their place to address the language barrier issue therefore ensuring effective learning process. The trainer and the researcher made the details of the curriculum in consideration of what was recommended by the Curriculum Experts	LGU Trainer Researcher	
Teaching and Learning Methods	Trainer and researcher provided the teaching methodology suited for their age, background, and capabilities in accordance to their roles and responsibilities as BHWs. Curriculum was sent to experts to validate and revise according to the scientific method without losing the essence and focus	Trainer Researcher Curriculum Experts	
Training Materials	Training materials were developed by the trainer and researcher together with the curriculum experts	Trainer Researcher Curriculum Experts	
Phase 3: Implementation and Evaluation			
Implementation	The curriculum was implemented to BHW. (The community was informed that they may join as volunteers and others may serve as their clients)	Trainer BHW Community members	
Evaluation	The BHWs were evaluated after the training together with the members of community who volunteered to become their clients to assess whether the BHWs improved or not. The LGU coordinated with TESDA to conduct an assessment exam to assess the participants of the training	BHWs Community members LGU TESDA	Quantitative
Maintaining the process of Participatory Curriculum Development	The researcher submitted the result of the training program to the LGU, household representatives and BHWs to show the effectivity of the program which can serve as future reference	Researcher LGU BHWs Household representatives	

service (within 1 to 10 years), profiles, and age; the only common characteristic among them was the training they have attended (*i.e.*, how to get blood pressure using a sphygmomanometer). Moreover, eight LGU staff members *(n=8*) and eight household representatives (*n=8*) were selected for this phase through convenience sampling and their availability to participate.

***Phase 2: LGU representatives and curriculum experts*.** For the PCD phase, the same LGU representatives from phase 1 were involved in determining the training program for the BHWs according to the collated data drawn from phase 1. Then, curriculum experts (*n=3*) were chosen to evaluate and revise the curriculum product before it was employed for BHW training. These experts have obtained a Master in Health Professions Education (MHPEd) degree and expressed willingness to take part in the pilot study.

Phase 3: BHWs, volunteers, clients of BHWs. For the implementation and evaluation phase, the same set of BHWs from Phase 1 were included. In addition, community volunteers (*n=10*) were selected through convenience sampling with the following inclusion criteria: a) age must be 18 to 35 years; b) *barangay* resident for more than five years; and c) willing and available to participate in the training. All of them (n=15) went through the Technical Education and Skills Development Authority (TESDA) certification program based on the developed curriculum. Consequently, 10 clients (of the BHWs) were selected through convenience sampling to evaluate the BHWs' behavior competencies post-training.

Data collection

Following the exploratory sequential mixed methods design, the three-phase process entailed the collection of qualitative data for Phases 1 and 2, followed by the collection of quantitative data in Phase 3.

Phase 1: Document review and focus group discussions (qualitative data). Data obtained were drawn from documents review and a series of focus group discussions (FGD). The documents and medical records reviewed contained the following information: mortality and morbidity for the past five years from the *barangay* health center, general information about the barangay (*e.g.*, socio-cultural, economic, local administration, and priority projects), policies and standards on BHW qualifications, and related documents. A total of three (3) FGD sessions were conducted where participants were asked open-ended questions. The first session (BHWs, *n=5*) focused on discussing the BHWs' knowledge, skills, and attitudes regarding roles, responsibilities and self-perceived needs; the second session (LGU representatives, *n=8*) centered on what aspects need improvement and require support for BHWs; lastly, the third session (residents, *n=8*) focused on the identification of basic health needs of the community and training needs. All FGD sessions were facilitated by the researcher. The data gathered from all sessions were organized for a Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis. Given the SWOT results and feedback from the community, a final list of the community's priority needs was determined.

Phase 2: Data obtained from Phase 1 and curriculum draft (Qualitative data). Extracted data from the needs assessment were largely used for this phase. To ensure that the curriculum development espoused a participatory approach, data from the previous phase were presented to the LGU representatives first to obtain feedback and suggestions, which were later used to determine the community's priority and create an initial draft of the curriculum. The LGU's mayor and representatives also gave their feedback and consequently provided a local TESDA trainer as well as funds for training. The drafted curriculum was then sent to the experts for evaluation and validation. To provide structure to the curricular evaluation, experts utilized the following elements of evaluation plan: (1) purpose (2) focus (3) nature and source of information needed (4) method of data gathering (5) data analysis (6) how the results were used [17]. The experts were tasked to identify actual curricular problems and give appropriate recommendations and changes. Moreover, the learning objectives were formulated based on a competency-based approach proposed in the book chapter written by Abarquez [20]: (1) defining and validating the health professional's (BHWs) roles and responsibilities; (2) breaking down professional responsibilities into their component tasks and doing a task analysis; (3) defining professional competencies; (4) translating professional competencies into student competencies; (5) categorizing student competencies; (6) determining relevance and adequacy of the intermediate to attain the terminal competencies. Feedback from the three experts were documented and were used to revise the curriculum. After the revision, the experts were given a copy of the revised curriculum, which they consequently approved.

Phase 3: Pre- and post-training data (Quantitative data). The evaluation and implementation phase gathered

data from BHWs and volunteers who were enrolled in the curriculum and were subsequently evaluated based on the KTEM. To assess Level 1 (reaction), the participants completed a questionnaire with a five-point rating scale on their general perception and reaction to the training. To assess the Level 2 (learning) in the cognitive domain, a set of pre- and post-test was completed, whereas to assess competency in the performance of intended clinical skills, a TESDA Certification test (commissioned by their LGU) was provided. Both competencies were assessed by TESDA accredited assessors. To assess Level 3 (attitudes in terms of confidence and empowerment), the BHWs accomplished a self-rating scale to determine behavior changes before and after the training. The clients (of BHWs) from the community accomplished a self-rating scale to determine whether there were perceived changes on the BHWs' practices as they delivered their services in the community before and after training.

Data Analyses

Following the principles of data analyses for an exploratory sequential mixed methods design, data sets were analyzed independently and each analytical step built on the succeeding analysis until the analytical process is completed [18].

Phases 1 and 2: Qualitative data analysis. Data sets drawn from documents reviews and FGD sessions were encoded in a word processing software. These data were organized through a SWOT Analysis and examined following deductive content analysis [21] which operationalized the SWOT that aided the structuring of the curriculum designing process in the next phase.

Phase 3: Quantitative data analysis. Data were classified and analyzed based on KTEM [19]: Level 1 (reaction), Level 2 (learning), and Level 3 (behavior). Data from Level 1 were drawn from the self-assessment rating scale (satisfaction) to evaluate the degree to which participants find the training favorable, engaging and relevant to their jobs, and were encoded and analyzed using Epi Info™ (Centers for Disease Control and Prevention), a tool designed to perform statistical analyses, specifically in determining the mean rating for each item in the questionnaire. Knowledge and Attitude under Level 2 assessment were both analyzed using paired *t*-test to determine the changes before and after the curriculum implementation. Skills, on the other hand, were evaluated through TESDA certification. Finally, data on Level 3 evaluation were analyzed using mean difference to determine if there are significant changes in the behavior of the BHWs before and after the training via Epi Info™.

Ethical Considerations

To ensure ethical conduct throughout the study, all participants signed an informed consent form (ICF) written in the Filipino language (based in Tagalog) and ensured that their participation was voluntary. Concretely, to ensure that they are oriented to the program, the researcher explained the whole process before each FGD commenced. Participants were informed that they could withdraw anytime during the course of the study protocol. Ethical approval was given through the University of the Philippines Manila Review Ethics Board with Clearance No. 2015-015-01.

Results

Qualitative results from document review and focus groups

SWOT Analysis using deductive content analysis the following:

Strengths. In SWOT, "Strengths" connote things that make an organization (or community, in this study) does well and has advantage over others. For the community, *Strengths* include: 1) BHWs are willing to be trained; 2) LGU is cooperative and willing to support the BHWs; 3) community members are willing to support their BHWs; and 4) the community is small, therefore easier to manage.

Weaknesses. On the other hand, *Weaknesses* means the intrinsic features of the community that are lacking or absent. These include: 1) lack of training; 2) low level of confidence; 3) lack of financial support; 4) lack of medical equipment and small health center; and 4) no planned activities to strengthen the BHWs.

Opportunities. Moreover, *Opportunities* are openings or external influences that can impact the community positively. Two opportunities were uncovered during the needs assessment: 1) *hilot* wellness program can be offered by the LGU, and 2) majority of the population belongs to the working group which may indicate active support from the community.

Threats. Lastly, *Threats* are pitfalls or external influences that can impact the community negatively or put the community's progress on hold or to a halt. For the local community under study, threats were determined as: (1) unchanged causes of morbidity from 2010 to 2013 which

Table 2. *Comparison of recommended programs as to positive and negative points*

Proposed Training/Program	Positive	Negative
Management for URTI and Diarrhea	It can address the top leading cause of morbidity (URTI) Trainers are available in their municipality	The community is already aware of what to do in managing the said diseases because they can be managed by taking medicines readily available to them During severe cases, the locals go to the hospital immediately and less likely to consult BHW for management According to the set roles and responsibilities, the BHWs can only promote prevention and control of these disease but not directly address the medical aspect, therefore training will only be limited
Emergency Training Program	It can give the BHWs confidence during emergency It can give the community confidence in BHW Trainers are available in their municipality	The BHWs are afraid to have a big task such as becoming service care provider during emergency The BHWs highest education attainment must be considered. Others mentioned that they might not be able to memorize some medical terminologies and might probably forget the training easily since they would not be able to practice it on a regular basis Roles and responsibilities of BHWs are only limited to promote prevention and control; this training may be more suitable for midwives and nurses in the community Not a priority for BHWs
Maternal and Childcare	It can give visible health assistance to pregnant member of the community as well as the children	BHWs are not confident enough according to them Training will just be limited since these are primary roles of nurses and midwives Childcare is being addressed by the LGU as stated by the stakeholders as evidenced by series of health programs among children Not a priority according to the LGU and household representatives
Hilot Wellness Program	This can help address one of the causes of morbidity in the community – Hypertension since Hilot wellness evidently improved blood circulation thus helping in management of Hypertension This can be performed by BHWs in accordance to their roles and responsibilities set by the DOH Trainer is available in their municipality LGU is willing to sponsor the training fees Trainees may undergo TESDA Certification and if passed, may increase confidence This can be a source of financial support Community can benefit immediately upon gaining the skills of Hilot wellness Training is not so complicated therefore can be grasped easily by the BHWs It does not need much of medical supplies and training materials are not sophisticated, may be replaced by the available resources within the community Participation from the stakeholders is high, therefore ownership is more likely to increase thus sustaining the program BHWs want this training	May not directly solve the community's most visible health problem May be underestimated by other sectors

are hypertension and UTI; 2) inclination to traditional health practices which may hinder modern and scientific approach to take place in the *barangay*; 3) most of the BHWs' highest educational attainment is secondary education; and 4) BHWs' trainings are not related to the actual roles and responsibilities set by the Department of Health.

The result of the SWOT Analysis was then presented to the LGU including representatives, municipal health officer, chairman, and the municipal mayor. In return, representatives from the LGU gave feedback to the researcher. These feedback responses generated four (4) possible trainings for the BHWs: management of URTI and diarrhea, emergency response, maternal and childcare, and *hilot* wellness. These four programs were subjected to qualitative feedback (positive and negative points) from the same cohort (see Table 2). Among all four programs, the *hilot* wellness program was perceived by the stakeholders to support the current needs of the BHWs in accordance to their expected roles and responsibilities. Therefore, the principal investigator, alongside the stakeholders involved, determined to co-create a curriculum for the *hilot* wellness program. The term "*hilot*" (/HEE-lot/) is a Filipino terminology that denotes the "Filipino art of healing" which uses manipulation and massage to traditionally treat musculoskeletal ailments, and reset dislocated and sprained joints [22]. Performing *hilot* is allowed by the Department of Health among midwives and other health aides and technicians provided that they received training from the TESDA.

Utilizing the qualitative results in Phase 1 to inform the curriculum product in Phase 2

In Phase 2, findings about the process and the product of the PCD are presented. Based on the selected program, which is *hilot* wellness, a competency table was co-designed to outline the intended responsibilities to be embodied by BHWs at the end of the training, specific tasks (learning objectives), and competencies (knowledge, skills, and attitudes). Curriculum experts were first consulted consequently yielding the following learning objectives informing the curriculum (1) understand the value of BHWs in the promotion of health and wellness (2) assess the different client's need for *hilot* wellness (3) follow the standards of practicing *hilot* wellness (4) apply *hilot* wellness to different clients, and (5) display confidence in the area of *hilot* wellness. These learning objectives were presented by the principal investigator to the LGU representatives including the municipal mayor and barangay chairman. Mutual agreement was obtained after the presentation which resulted in the provision of financial and human resource support from the LGU. From here on, the PCD proceeded where the principal investigator and the TESDA trainer determined the teaching-learning method and materials needed to achieve the set objectives, selected the training contents largely drawn from the TESDA modules, and developed an assessment plan for the BHWs and training participants. The TESDA trainer was selected by the LGU to avoid language barrier (as the community speaks the Ilokano language) and ensure maximum learning of the participants. TESDA is a partner of LGU, hence their involvement in the pilot study. All of the curriculum experts approved of the revised curriculum. The generated curriculum is shown in Figure 2 including a curricular matrix to present all curricular components.

Quantitative results from the curricular implementation and evaluation

A total of eight BHWs and 10 volunteers were enrolled in the 10-day training program for the *hilot* wellness under TESDA. The curriculum was implemented for a total of 80 hours: interactive lectures focused on scientific knowledge and skills knowledge (24 hours); demonstration and return demonstration of the expected skills on *hilot* (48 hours); and practice with actual clients (8 hours). Instructional strategies utilized are briefly described below:

Interactive lecture. This teaching-learning strategy was used repeatedly to introduce foundational knowledge on *hilot* wellness, provide clarity on things the participants do not know yet, correct some misconceptions especially in the field of health and wellness, and discuss the basic roles and value of BHWs in the community.

Demonstration and return demonstration. This teaching-learning strategy was utilized to help the participants to visually appreciate the correct process and technique of the *hilot* training and get some feedback to improve skills development.

Practice. The last teaching-learning strategy was used after the participants demonstrated confidence in the basic knowledge on *hilot* and demonstrated confidence in applying *hilot* skills in a simulation context. The practice session required the participants to apply what they have learned in the training center to actual clients from the community with different cases.

For the evaluation part of Phase 3, three levels of the KTEM were examined: reaction (Level 1), knowledge and

skills (Level 2), and behavior (Level 3). Level 4 (Organizational Performance) was not included in this study because it would involve a longitudinal design whereas this study was cross-sectional in nature. Findings revealed that the participants generally perceived the *hilot* wellness training to be satisfactory and to have improved their knowledge, skills, and attitudes towards providing *hilot* services in their community. Where results all came from a pilot study, numeric values must not be used to generalize that implementing *hilot* training programs in rural communities around the Philippines can readily improve reaction, learning, and behavior among BHWs. However, findings from this pilot study could potentially be used as baseline data for another study that will generate similar data from a larger sample size. Notably, all these findings were presented to the LGU and community stakeholders at the conclusion of the pilot study. Quantitative data results per Level is summarized in Table 3.

Discussion

In health professions education, SWOT Analysis has been used to develop interprofessional learning activities [23] to develop a framework of an integrated communication skills curriculum in a medical curriculum [24], and to develop a strategy to support researchers in medical education [25]. Similarly, this pilot study utilized SWOT Analysis to create a curriculum that can address the current needs of the community. The generated curriculum included learning activities and some strategies to propel the training program from just an educational product into a health care service.

Table 3. *Summary of evaluation results and interpretation after curriculum implementation based on the Kirkpatrick Evaluation Model (Level 1, 2 and 3); Sample size: Levels 1 and 2, n=15; Level 3, n=10*

Kirkpatrick Training Evaluation Model Level	Summary of results and interpretation
Level 1: Reaction of participants to training	Overall mean rating = 4.93 (over 5) signifying that the participants of the *hilot*[1] training were generally satisfied.
Level 2: Assessment of knowledge	A 45-item test assessed the participants' knowledge (with a passing score is 27 or 65.0%). Treated with a paired *t*-test, knowledge scores revealed that there was a statistically significant difference before (M=14.60, SD=3.13) and after (M=33.80, SD=2.17) the *hilot* training; *p*-value = 0.001. This finding suggests that the intervention (provision of *hilot* training) enabled a change in knowledge (23-point difference between pre- and post-test) among participants towards achieving the set learning objectives.
Level 2: Assessment of skills	The assessment of skills was conducted through TESDA where the accredited accessors assessed the essential skills for *hilot* for each participant. The assessment was not numerical but used a pass-or-fail assessment structure. All BHWs were awarded an assessment of "competent" at the end of the training program.
Level 2: Assessment of attitudes (empowerment)	Treated with a paired *t*-test, empowerment level among participants revealed that there was a statistically significant difference before (M=19.20, SD=1.10) and after (M=23.80, SD=1.30) the *hilot* training; *p*-value = 0.000. This finding suggests that the participants' perceived empowerment increased after the *hilot* training. Based on the self-assessment, the most improved item is "I am able to assert what is right" (*D=1.4*) while the least improved item is "I am ready to help my community" (*D=0.4*).
Level 2: Assessment of attitudes (confidence)	Treated with a paired *t*-test, confidence level among participants revealed that there was no statistically significant difference before (M=48.80, SD=8.04) and after (M=60.20, SD=4.44) the *hilot* training; *p*-value = 0.008. Although there was no significant difference, findings show that the most improved item is "I am able to perform *suob*[1]" (*D=1.6*), followed by "I am able to assess patients" (*D=1.4*). The least improved item is "I am able to take temperature accurately" (*D=0.4*) because this skill is already being performed by the participants even before the *hilot* training.
Level 3: Assessment of behavior	Four weeks after the *hilot* training, the clients of the participants were asked to rate the BHWs across 16 behavior areas through a questionnaire. In terms of behavior, all items showed improvement after the training. The most improved items were "Performing *dagdagay*[2]" and "Assessing patients" (*D=2.0*) as they both had the highest mean difference.

[1]A technique used to induce heat expelled through perspiration using medicinal herbs and/or mineral medicine, steam or smoke
[2]An acupressure treatment for the feet that uses two bamboo or rattan sticks, in place of finger pressure, to stimulate the soles and cleanse and purify the feet.

Learning needs assessment is a crucial stage in the educational process that leads to changes in practice, policy-making, and continuing professional development [26]. The needs assessment phase in this pilot study primarily helped in defining concepts and determining the design of the curriculum for the next phase. However, it is important to take note that the needs of the community would not be fully met when the research protocol had ended. In other words, when the training had been completed, the community, which was the collective participant for the study, continues to operate and address their needs in health and other aspects of day-to-day life. Although seen lightly by some researchers, this situation poses a common ethical dilemma in qualitative research. It is but prudent for researchers using a participatory or any approach to be conscious and transparent with the ethical risks associated with the study being conducted [27]. To mitigate this risk, researchers shall be deliberate and ethical in sharing study results to participants [28], establish safety measures for researchers and participants [29] and project "longitudinal effect" within study protocols [30]. Particularly in health sciences and health professions education research, engaging participants from the communities entail the accountability of letting them know how their needs were processed and how their participation was contributive in the short- and long-term. Alternatively, researchers using participatory approaches are to be cognizant about the ever-changing needs of the community even after the study protocol. Beyond engaging them in another research endeavor, follow-up engagements can be more informal such as doing regular visits to monitor needs, exchange information for capacity-building, and to simply say "hello".

This article demonstrated how reforming health professions education is not a sole responsibility among educators and academics, but also among its stakeholders. The findings in this pilot study emphasized the essence of tapping the needs and interests of the community and use these information to frame the curriculum development and evaluation plan for *hilot* wellness training. The activation of a participatory approach enabled "choice to learn" rather than "forced to learn", the latter being a common pitfall when implementing training or vocational programs. For instance, in the context of drug treatment and rehabilitation programs in the Philippines, Sy and associates [31] proposed a participatory approach in order to espouse choice in learning vocational skills towards recovery. A participatory approach can be employed by "bring[ing] together recovering clients, professionals, and even funders to openly discuss concrete obstacles and together form solutions during and especially after rehabilitation" (p.10). This same principle can be translated in health professions education when all stakeholders openly discuss issues and actively form solutions towards curriculum development. In comparison to a typical curriculum development process where stakeholders are only involved at the beginning of the curriculum designing activity, this pilot study showcased the multiple steps involved where input and output from stakeholders were considered and utilized to propel throughout the three-phase process based on the RDC. In light of contributing to build new knowledge, this article provides evidence that PCD can similarly be used in health professions education.

Through our findings, we challenge educators who are currently designing and implementing outcomes-based education (OBE) to consider systems-based education (SBE) in health professions education. According to Frenk and associates [2], SBE, dubbed as the "third generation educational reform", is an educational reform that aims to "improve the performance of health systems by adapting core professional competencies to specific contexts, while drawing on global knowledge". One way to reinforce SBE is through the use of a participatory approach in curriculum designing. While the popularity of OBE is evident among Philippine higher education institutions [8], our study findings showed how SBE is more palatable and relevant in building the capacity of healthcare workers and BHWs from the grassroots. On the other hand, a recent debate article by Buja [32] argued that "enthusiasm for reform needs to be tempered by a more cautious and realistic approach". He suggested that medical education must not be "bended" just to fit-in prevalent professional and cultural trends (*i.e.*, interprofessional education, population health, health policy, healthcare delivery systems), but to rather work to change the already dysfunctional healthcare system [32]. While PCD is acquainted with the third generation educational reform [2], advocates of PCD and participatory approach must be cognizant of the approach's pitfalls including complexity of evaluation when more stakeholders are included, stakeholders' legitimacy underpinned by politics, "missing" stakeholder(s) where a recognized stakeholder is absent during the process of participation, and mobilizing bias by identifying "preferred" stockholders because of convenience [33].

Educators support the modern perspective of educational evaluation that goes beyond grading students [34]. While the sample size was small, utilizing the KTEM in this pilot study provided a holistic evaluation of the implemented curriculum.

The findings yielded quantitative values to provide initial explanation rather than generalization. The high satisfaction of the participants on the *hilot* wellness training program suggested a higher potential of program continuation. While good satisfaction ratings do not guarantee learning, poor satisfaction ratings most likely reduce the possibility of it occurring [35]. To take advantage of the relatively high satisfaction of the participants, knowledge, skills, and attitudes (confidence and empowerment) on *hilot* were developed subsequently through the generated and implemented curriculum. According to the KTEM, these four conditions are required for change to occur in learning: 1) the learner must have a desire to change; 2) the learner must know what to do and how to do it; 3) the learner must work in the right climate; and 4) the learner must be rewarded for changing [35]. These four conditions were evidently attained throughout the PCD process. Whether statistics was significant or not, "change" in terms of learning may still occur even after the pilot study had been completed. In other words, learning is not confined within a certain period of time. Moreover, learning is life-long and not linear. For example, interprofessional education and collaborative competencies follow a non-linear trajectory due to a "perceptual dip" as coined by Sy and associates [36]. Perceptual dip connotes a "critical season in professional growth—a concept that could challenge the traditional and progressive manner of how attitudes are learned and developed" [36, p.64]. Simply put, in the course of learning of health professionals, there would be a period where their perception to learn slightly decreases as a result of seemingly negative experiences such as being exposed to reality, encountering challenges, and resolving conflicts—which are birth pains necessary for professional growth and development [36,37]. Hence, it is possible to observe learning not only through grades, labeled values, or rewards but also through times when the learner experiences challenges and conflicts.

While *hilot* is known as an ancient Filipino art of healing through massage, the practice of *hilot* has evolved with much sophistication overtime. This ancient art is considered a traditional and alternative medicine and is still mainly practiced in rural Philippines. However, traditional and alternative medicine still struggles to be incorporated within the national health care system due to competition with Western medicine, stigma of superstition, and lack of scholarly evidence [38]. There have been organizations advocating for the fusion of both Western and alternative medicine through the Traditional and Alternative Medicine Act of 1997 or TAMA to make healthcare more accessible in rural areas [38]. The Philippine Institute of Traditional and Alternative Health Care (PITAHC) is a group that advocates for the scientific research on traditional and alternative medicine and its development to directly impact public health care. Choosing *hilot* wellness as a training program for BHWs was not only possible because of its positive perception from the community and its lawful mandates, but because it is part of rural life and is deeply embedded in the local community's history, culture, and traditions [39]. Acknowledging not only the choice of the participants, but more so their culture, within a research context characterizes a participatory approach in curriculum development.

Limitations were also recognized for this pilot study including a small sample size, time constraints in developing the curriculum, and potential stakeholder selection bias. Although the small sample size was delimiting, our study findings did not intend to generalize since our mixed data sets can only be applicable for a small local community and for a pilot study context. More time in developing the curriculum could have been ideal to engage more partners that will generate a more comprehensive and readily transferable curriculum for other communities. Lastly, another limitation was the selection bias towards stakeholders. The pilot study was only limited to be conducted within a small-sized local community with limited stakeholders and resources. Furthermore, this article presented carefully selected data sets that highlighted the RDC, PCD, and KTEM processes to make it more transferable and relevant to other health professions educators, scholars, and curriculum experts who are re-imagining their curricular exercises in their respective fields.

Conclusion

The evident shortage of health professionals who serve the communities and populations signposts health professions educators to act, innovate, and participate more. Reforms in health professions education is no longer a suggestion, but a call-to-action for health professions educators and scholars especially in this time of ever-changing healthcare needs. This article described the process of curriculum development using a participatory approach for BHWs and community workers in a local Philippine community. This curriculum development process entailed the generation and analysis of data extracted from the community which yielded an educational product—a curriculum that aims not only to offer sustainable and longitudinal health care services, but also to value traditions, culture, and history while considering that learning is not linear. Whereas complications and limitations are expected

in participatory approaches in health care education, practice, and scholarship, we can see that this can be overcome by ensuring that stakeholders' participation boosts their morale, encourages governmental support, ensues community empowerment, and assures longitudinal effects for the community. This first attempt to generate a curriculum using a PCD approach in health professions education posits that a participatory approach to curriculum development is feasible and can be pursued. We, therefore, challenge health professions educators to plant themselves not only in the classrooms where curricula are made, but more so in "fertile grounds" of health care practice where curricula are fundamentally made for.

Acknowledgement

The authors would like to thank YHWH, Almighty God for the wisdom and protection throughout this research endeavor and to Dr. Nemuel Fajutagana for his guidance and feedback to improve this research undertaking until its completion.

References

1. World Health Organization. (2013) Transforming and scaling up health professionals' education and training.
2. Frenk J, Chen L, Bhutta ZA, *et al.* (2010) Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. Lancet 376(9756):1923-58.
3. Saylor JG, Alexander WM. (1981) Curriculum planning for better teaching and learning. 4th ed. New York: Holt, Rinehart, and Winston.
4. Abarquez LF. (2010) The lesson plan. In: Sana EA. Teaching and learning in the health sciences. Quezon City: The University of the Philippines Press, pp. 67–86.
5. Gall, M, Gall JP, Borg WR. (2007) Education research: An introduction. 8th ed. Boston: Pearson Allyn and Bacon.
6. Alsubaie MA. (2016) Curriculum development: Teacher involvement in curriculum development.
7. Taylor P. (2001) 10 key stages towards effective participatory curriculum development. In: Helvetas Zürich. Experience and learning in international co-operation—Helvetas Publication, No. 2. St. Gallen, Switzerland: Helvetas, Swiss Association for International Cooperation.
8. Sana EA, Roxas AB, Reyes AT. (2015) Introduction of outcome-based education in Philippine health professions education setting. Philippine Journal of Health Research and Development 19(1):60–74.
9. Tan, EA. (2011) What's wrong with the Philippine higher education. The Philippine Review of Economics 48(1):147–184.
10. Dayrit M, Lagrada L, Picazo O, Pons M, Villaverde M. (2018) The Philippines health system review. World Health Organization, Regional Office for South-East Asia.
11. Senate of the Philippines. (2010) Barangay Health Workers Act of 2010, Senate Bill No. 749, Fifteenth Congress of the Republic of the Philippines.
12. Civil Service Commission. (2014) Barangay health worker eligibility.
13. Lehmann U, Sanders S. (2007) Community health workers: What do we know about them? The state of the evidence on programmes, activities, costs and impact on health outcomes of using community health workers.
14. Taylor P. (2004) How can participatory processes of curriculum development impact on the quality of teaching and learning in developing countries?
15. Sidebotham M, Walters C, Chipperfield J, Gamble J. (2017) Midwifery participatory curriculum development: Transformation through active partnership. Nurse Education in Practice 25:5-13.
16. Dalmacio RV. (1999) Agroforestry curriculum development experiences in the Philippines with particular reference to the University of the Philippines Los Baños. Paper presented at the Regional Workshop on Participatory Agroforestry Curriculum Development; Nov 23–26, 1999; Hanoi, Vietnam.
17. Reyes WS, Murray-Harvey R. (2018) Faculty and student teachers "voices" in developing a multicultural teacher education curriculum using a collaborative-participatory approach. The Normal Lights 12(1):156–184.
18. Creswell JW. (2014) Research design: Qualitiative, quantitative, and mixed methods. 4th Ed. Washington DC (US): SAGE Publications Inc.
19. Kirkpatrick DL, Kirkpatrick JD. (2009) Evaluating training programs: The four levels. 3rd ed. Oakland, California: Berrett-Koehler Publishers.
20. Abarquez LF. (2010) Curriculum Planning and Development. In: Sana EA. Teaching and learning in the health sciences, Quezon City: The University of the Philippines Press, pp. 246-252.

21. Elo S, Kyngäs H. (2008) The qualitative content analysis process. Journal of Advanced Nursing 62(1):107-115.
22. Ohts KS, Hinojosa SZ. (2004) Healing by hand: Manual medicine and bonesetting in global perspective. California, USA: Altamira Press.
23. Topor DR, Dickey C, Stonestreet L, Wendt J, Woolley A, Budson A. (2018) Interprofessional health care education at academic medical centers: Using a SWOT analysis to develop and implement programming. MedEdPORTAL 14:10766.
24. Loureiro E, Ferreira MA, Fresta M, Ismail M, Rehman SU, Broome M. (2017) Teaching and assessment of clinical communication skills: Lessons learned from a SWOT analysis of Portuguese Angolan and Mozambican Medical Education. Porto Biomedical Journal 2(2):47-58.
25. Prediger S, Harendza S. (2016) Analysis of educational research at a medical faculty in Germany and suggestions for strategic development - A case study. GMS Journal for Medical Education 33(5):Doc71.
26. Grant J. (2002) Learning needs assessment: Assessing the need. The BMJ 324(7330):156-9.
27. Smith G. (2017) Ethical risks of pursuing participatory research as an industrial doctoral student. Gothenburg: MDPI, pp. 1-5.
28. Downey AS, Busta ER, Mancher M, *et al.* (eds.) (2018) Principles for the Return of Individual Research Results: Ethical and Societal Considerations. In: Returning Individual Research Results to Participants: Guidance for a New Research Paradigm. Washington DC: National Academies Press (US), pp.59-92.
29. Williamson AE, Burns N. (2014) The safety of researchers and participants in primary care qualitative research. The British Journal of General Practice: The Journal of the Royal College of General Practitioners 64(621):198–200.
30. Brutus S, Aguinis H, Wassmer U. (2013) Self-reported limitations and future directions in scholarly reports: Analysis and recommendations. Journal of Management 39(1):48–75.
31. Sy M, Delos Reyes R Roraldo M, Ohshima N. (2019) Uncovering the lived experiences of Filipino drug recoverees towards occupational participation and justice through an interpretative phenomenological analysis. Scandinavian Journal of Occupational Therapy.
32. Buja LM. (2019) Medical education today: All that glitters is not gold. BMC Medical Education 19(110):11p.
33. The Open University. (2016) Theories in technology evaluation, 2.3 Criticisms and complications of a participatory approach.
34. Sana EA. (2010) Teaching and learning in the health sciences. Quezon City: The University of the Philippines Press, pp. 182-183.
35. Rouse DN. (2011) Employing Kirkpatrick's evaluation framework to determine the effectiveness of health information management courses and programs; Perspective in Health Information Management 8(Spring):1c.
36. Sy M, Martinez P, Labung F, *et al*. (2018) Baseline assessment on the quality of interprofessional collaboration among Filipino Mental Health Professionals. Journal of Interprofessional Education and Practice 14:58-66.
37. Sy MP. (2017) Filipino therapists' experiences and attitudes of interprofessional education and collaboration: A cross-sectional survey. Journal of Interprofessional Care 31(6):761-770.
38. Mendoza RL. (2009) Is it really medicine? The Traditional and Alternative Act and Informal Health Economy in the Philippines. Asia Pacific Journal of Public Health 21(3):333-345.
39. Apostol VM. (2012) Way of the ancient healer: Sacred teachings from the Philippine ancestral traditions. California: North Atlantic Books.