



REFERENCES

- American Association for Adult and Continuous Education. (2000). Handbook of adult and continuous education. Eds. Wilson, A., Hayes, E. San Francisco: Jossey-Bass.
- Asthan, J. (1993). Institutes of public health and medical schools: grasping defeat from the jaws of victory? J. Epidemiology & Community Health 47: 165-168.
- Asthan, J., Seymour, H. (1988). The new public health. Milton Keynes: Open University Press.
- Barton, W.L. (1979). Alma-Ata: Signpost to a new health era. J World Health 1979: 10-14.
- Baskett, M., Marsick, V. (1992) Eds. Professional ways of knowing: New findings on how to improve professional education. New Directions for Adult and Continuous Learning. No.55. 1992. Higher and Adult Education Series. San Francisco: Jossey-Bass.
- Baskett, H.K.M., Marsick, V.J., Cervero, R.M (1992). Putting theory and practice in theory. In Professionals' ways of knowing. New Directions for Adult and Continues Learning. No 55. 1992. Higher and Adult Education Series. San Francisco: Jossey-Bass.
- Bligh, D., Jaques, D., Piper, D.W. (1981). Seven decisions when teaching students. 2nd ed. Devon: Exeter University.
- Beaglehole, R., Bonita, R. (1998). Public health at the crossroads: which way forward? Lancet 351: 590-592.
- Beaglehole, R., Bonita, R. (1997). Public health at the crossroads. Cambridge: University Press.
- Biewen, M. (1999). Item non-response and inequality measurement: evidence from the German earnings distribution. Discussion paper series No 298 Department of Economics. Heidelberg: Ruprecht-Karls-Universitat.
- Boelen, C. (1999). Towards unity for health: Challenges and opportunities for partnership in health development. Working Paper WHO International Conference, Phuket, Thailand, August 1999. Geneva: WHO.
- Boelen, C. (1997). The five star doctor: An asset to health care reform? Human Resources for Health Development Journal 1: 6-12.

- Borgers, N., Hox, J. (2002). Item non-response in questionnaire research with children and young adolescents. University of Amsterdam Faculty of Educational Sciences. (Online) Available from: <http://www.Yahoo.com/search/itemnonresponse> [12 Mar.2002].
- Brandeis University. (1999). National evaluation of learn and serve America. M.A: Brandeis University Center for Human Resources, The Heller School. (Online) Available from: <http://heller.brandeis.edu/chr> [15 Jan. 2000].
- Burns, L. (1998). Make sure it's service learning, not just community service. The Educational Digest 64: 38-41.
- Cassels, A., Janovski, K. (1998). Better health in developing countries: are sector-wide approaches the way for the future? Lancet 352: 1777-1779.
- Chauvin, S.W., Anderson, A.C., Bowdish, B.F. (2001). Assessing the professionals development needs of public health professionals. J Public Health Management and Practice 7: 23-34.
- China Medical Board. (1999). Strengthening Public Health Education in Rural Thailand. Ts. Grant No. 9974. NY: China Medical Board.
- Chuchat, A., Watcharapai, S. (1999). Evaluation of human resource for health development project. Bangkok: MOPH-PBRI.
- Chulalongkorn University. (2002). Facilitators training Learning @ the Workplace Southern Provinces. Bangkok: Chulalongkorn University, College of Public Health.
- Chulalongkorn University. (2001). Opinion poll. Chula Newsletter 7: 16.
- Chulalongkorn University. (1999). Facilitators training Learning @ the Workplace Chonburi-II. Bangkok: Chulalongkorn University, College of Public Health.
- Chulalongkorn University. (1995). Human resources for health development project. Bangkok: Chulalongkorn University, College of Public Health.
- Corso, L.C., Wiesner, P.J., Halverson, P.K., Brown, C.K. (2000). Using the essential services as a foundation for performance measurement and assessment of local public health systems. J. Public Health Management Practice 6: 1-18.
- Council on Education for Public Health. (1999). Accreditation criteria for graduate schools of public health. (Online) Available from: <http://www.ceph.org/gshp.htm> [30 Jun. 2000].

- Council on Linkages between Academia and Public Health Practice (2001). Public health workforce development: Core competencies for public health professionals. (Online) Available from: [hppt://www.phf.org/phworkforce.htm](http://www.phf.org/phworkforce.htm) [25 Jun.2002].
- Council on Linkages between Academia and Public Health Workforce (1998). Refining and validating public health competencies: A proposal for next steps. (Online) Available from: www.phf.org/Link/competencies.htm [24 Oct.2000].
- Council on Linkages between Academia and Public Health Workforce (1998). The public health workforce: An agenda for the 21st century. (Online) Available from: www.TrainingFinder.org/competencies/about.htm [26 Oct.2000].
- De Cenzo, D., Robbins, S. (1994). Human resource management concepts and practices. 4th ed. NY: John Wiley and Sons.
- de Leeuw, E. (1997). Are schools of public health ready for the 21st century? Technical Seminar. Geneva: WHO.
- De Leeuw, E.D. (1999). Item non-response: Prevention is better than cure. Draft extract from: Survey Methods Newsletter 19.
- de Macedo, C.G.(1992). The context. In: The crisis of public health – reflections for the debate. Pan American Health Organization, Washington DC 1992 (Scientific Publications No.540).
- Diamond, R.M. (1998). Designing and assessing courses and curricula: a practical guide. 2nd ed. San Francisco: Jossey-Bass Publishers.
- Ebrahim, S. (1993). Attributes and competencies of public health graduates from the existing experiences of various countries. In: Attributes and threshold capacities of public health graduates 1993. Bangkok: Chulalongkorn University, College of Public Health.
- Engel, C. et al. (1988). Innovative approaches in continuing education of health personnel in the European region. Proceedings of a WHO Workshop to promote the use of new methods in continuing education. Barcelona Dec. 9-12, 1987. (Online) Available from: <http://www.askeric.org/ERIC>. [15 Jan.2000].
- Frenk, J. (1992). The new public health. In: The crisis of public health – reflections for the debate. PAHO Scientific Publication No. 540. Washington, D.C: Pan American Health Organization.

- Frenk, J., Gwin, C., Michaels, B., Suwanela, C., Walt, G. (1998). Rx for global health cooperation beyond 2000. Washington DC: ODC Publications.
- Garrett, L. (2000). The changing face of public health and future global prophylaxis. Chap. 6 in Betrayal of trust: The collapse of global public health. New York: Hyperion.
- Godfrey, P. (1999). Service-learning and management education: A call for action. Journal of Management Inquiry 8: 363-378.
- Goleman, D. (1996). Emotional intelligence: Why it can matter more than IQ. London: Bloomsbury.
- Goleman, D. (1998). Working with emotional intelligence. NY: Bantam Books.
- Grey, M., Ondaatje, E., Zakaras, L. (1999). Combining service and learning in higher education. Washington D.C: Rand – Education. (Online) Available from: www.nicsl.coled.umn.edu. [27 Jan.2000].
- Groves, R. (1989). Survey error and survey costs. New York: Wiley.
- Grunert J. (1997). The course syllabus: A learning-centered approach. MA: Anker Publishing.
- Herman, J.L., Morris, L.L., Fits-Gibbon C.T. (1987). Evaluator's handbook. London: Sage Publications.
- Horton, R. (1998). The new, new public health of risk and radical engagement. Lancet 352: 252-256.
- Jamison, D., Frenk, J., Knaul, F. (1998). International collective action in health: objectives, functions and rationale. World Health, Lancet 351: 514-518.
- Kahne, J., Westheimer, J. (1996). In service of what? Phi Delta Kappan 77: 592-599.
- Keirns, J.L. (1999). Designs for self-instruction: Principles, processes and issues in developing self-directed learning. London: Allyn and Bacon.
- King, S. (1999). Future of public health: the educational problem of linking learning and practice. NY: Rockefeller Foundation.
- Kleczkowski, B., Roemer, M., Van Der Werff, A. (1984). National health systems and their orientation towards health for all: Guidelines for policy making. WHO Public Health Papers No.77 Geneva: WHO.
- Kolb, D. (1984). Experiential Learning. New Jersey: Prentice Hall.

- Krosnick, J.A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys. Journal of Applied Cognitive Psychology 5: 213-236.
- Likhityingwara, C., Taearak, P., Tawichachart, T. Ministry of Public Health, Thailand. Personal communication: 3 April 2001.
- Mann, J.M. (1997). Public health: leadership is a global issue. Lancet 350: 23.
- Marsick, V.J., Watkins, K.E. (1992). Continuous learning in the workplace 3: 9-12. Calgary: University of Calgary.
- Mays, G.P., Halverson, P.K. (2000). Conceptual and methodological issues in public health performance measurement: results from a computer assisted expert panel process. J. Public Health Management Practice 6: 59-65.
- McKeown, T. (1976). The role of medicine: Dream, mirage or nemesis. London: Nuffield Provincial Hospitals Trust.
- Morrison, J.M., Sullivan, F., Murray, E., Jolly, B. (1999). Evidence-base education: development of an instrument to critically appraise reports of educational interventions. J. Med. Educ. 33: 890-893.
- Navaro, V. (1995). European schools of public health. Lancet 1995: Vol. 345: 1511.
- Nowlen, P.M. (1990). New expectations, new roles: A holistic approach to continuous education for the professions. In Cervero et al. Visions for the future of continuous professional education. Athens: Georgia Center for Continuous education, University of Georgia.
- O'Reilly, D., Cunningham, L., Lester, S. Eds. (1999). Developing the capable practitioner. VA: Stylus Publishing. Styluspub@aol.com.
- Peckham, M. (1999). National health service: Developing the national health service: a model for public Services. Lancet 354: 1539-45.
- Phipps, R., Merisotis, J. (1999). What's the difference? A review of contemporary research on the effectiveness of distance learning in higher education. Washington D.C: The Institute for Higher Education Policy. (Online) Available from: www.nicsl.coled.umn.edu/res/lsreport [17 Jan.2000].
- Piskurich, G.M. (1993). Self-directed learning: A practical guide to design, development and implementation. San Francisco: Jossey-Bass Publishers.

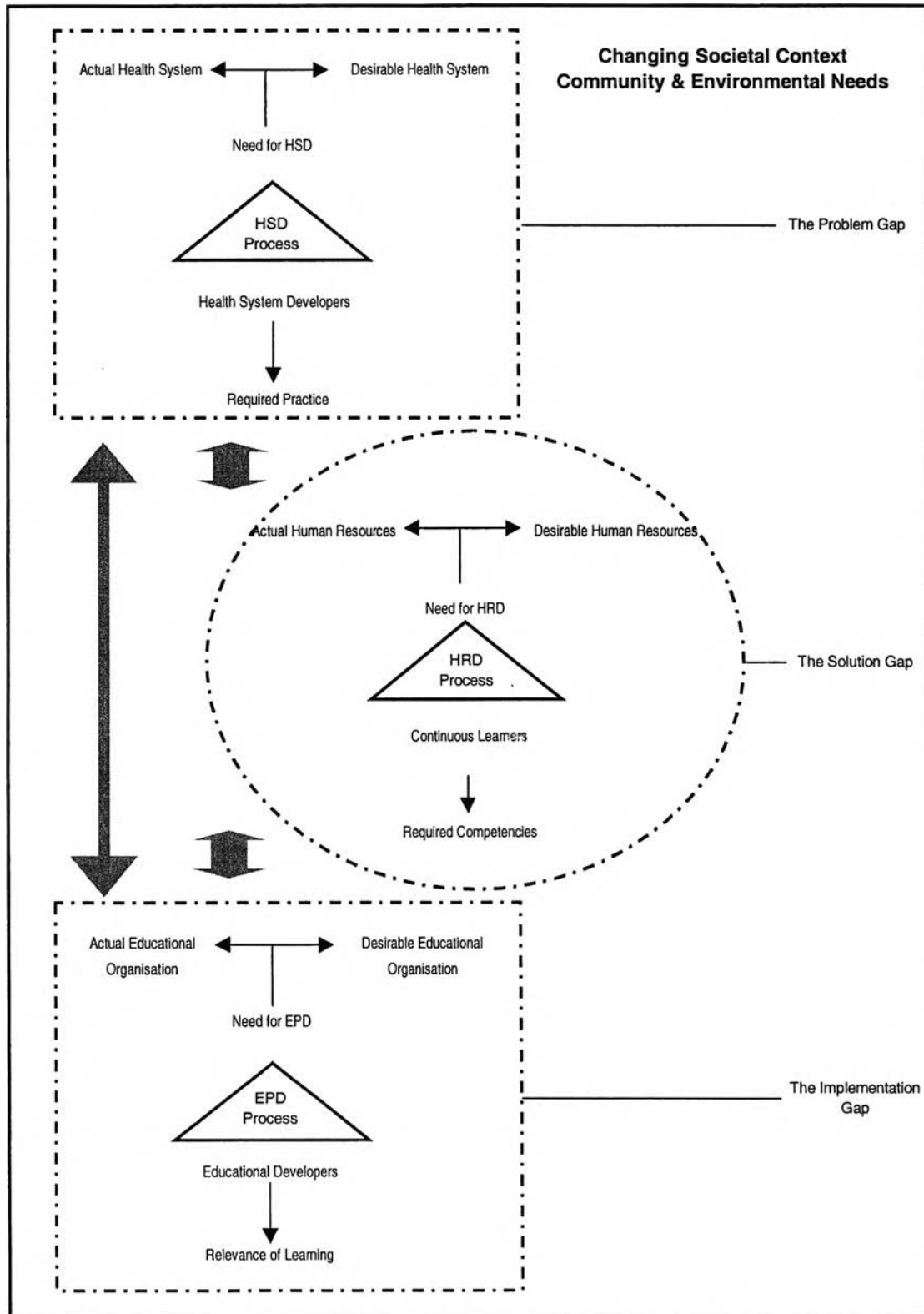
- Portney, L.G, Watkins, M.P. (2000). Foundations of clinical research: Applications to practice. 2nd ed. New Jersey: Prentice Hall.
- Potter, M.A., Pistella, C.L., Fertman, C.L., Dato, V.M. (2000). Needs assessment and a model agenda for training the public health workforce. Am J Public Health 90: 1294-1296.
- Public Health Functions Steering Committee. (1995). Public health in America: Essential public health services. (Online) Available from: <http://www.health.gov/phfunctions/public.htm> [15 Dec.1999].
- Roemer, M. (1991). National health systems of the world. Volume 1 the countries. NY: Oxford University Press.
- Roper, W.L., Mays, G.P. (2000). Performance measurement in public health: conceptual and methodological issues in building the science base. J Public Health Management Practice 6: 66-77.
- Sen, K. (1994). Ageing: Debates on demographic transition and social policy. London: Zed Books.
- Senge, P.M. (1990). The Fifth Discipline: The Art and Practice of the Learning Organization. San Francisco: Jossey-Bass.
- Chulalongkorn University, CPH. (1993). Sitthi-amorn, C in Strategic planning for the College of Public Health, Chulalongkorn University. Proceedings of the international consultative workshop: attributes and threshold capacities of public health graduates. ISBN 974-7571-33-1 Bangkok: College of Public Health, Chulalongkorn University.
- Sorensen, A. A., Bialek, R.G. Ed. (1993). Linking graduate education and practice. The Public Health Faculty-Agency Forum. Final Report. Atlanta: CDC
- Sram, I., Ashton, J. (1998). Millenium report to Sir Edwin Chadwick. BMJ 317: 592-596.
- Thailand, Ministry of Public Health. (2001). Ministry of public health and the 9th health development plan in Thailand. Bangkok: MOPH Bureau of Health Policy & Planning.
- Thailand, Ministry of Public Health. (1999). Minutes of the meeting on the role of facilitators for the Learning @ the Workplace Program. August 1999. Bangkok: MOPH, PBRI.
- Thailand, Ministry of Public Health. (1998). Ministry of public health and the 8th national health development plan in Thailand. Bangkok: MOPH Bureau of Health Policy & Planning.
- The Lancet Ed. (1997). The moral maze of public health. Editorial Lancet 349: 583.

- Turnock, B, Handler, A. (1997). From measuring to improving public health practice. Annual Review Public Health 18:261-282.
- Turnock, B., et al. (1999). A conceptual model for assessing public health system performance. Working paper. Chicago: University of Illinois, Illinois School of Public Health.
- University of Michigan. No-response sometimes doesn't matter. Michigan Today, 2001. (Online) Available from: <http://www.umich.edu/newsinfo/mt/html> [18 Mar.2002].
- Vandenbroucke, P.J. (1994). New public health and old rhetoric. BMJ 308: 994-995.
- VanGundy, A.B. (1981). Techniques for Structured Problem Solving. New York: Van Nostrand Reinhold.
- Walt, G. (1998). Globalisation of international health. World Health. Lancet 351: 434-437.
- Wood Johnson Foundation. Developing an agenda for public health practice research. (Online) Available from: <http://www.phf.org/Link/April99Concept.htm> [20 Aug.2002].
- World Health Organization. (2000). The world health report 2000: Health systems: Improving performance. Geneva: WHO.
- World Health Organization. (1996). New challenges for public health: Report of an interregional meeting. WHO HRH/96.4 Geneva: WHO.
- World Health Organization. (1993). Increasing the relevance of education for health professionals. WHO technical report series 838. Geneva: WHO.
- World Health Organization. (1993). Training manual on management of human resources for health. WHO/EDUC/93.201 Geneva: WHO.
- World Health Organization. (1992). Balance and relevance in human resources for health for HFA/2000. Report and Documentation of the Technical Discussions SEA/HMD187. New Delhi: SEARO.
- World Health Organization. (1988-91). Reorientation of medical education. Parts 1,2 & 4. SEARO Regional Publications No. 18. New Delhi: WHO-SEARO.
- Yin, R. (1989). Case study research: design and methods. London: Sage Publications.

APPENDICES

Appendix-I

Diagrammatic Presentation on the Problem Gaps



HDS: Health Systems Development, HRD: Human Resources Development, EPD: Educational Program Development

Appendix-II

Sample Strategies and Sample Plans

A. Public Health Expert Panel

A Public Health Expert Panel was purposively selected under following criteria:

Selection Criterion	Participation	
	Planned	Actual
Representing the MOPH	3	1
Represent MOPH regions	3	3
Represent the private health sector	1	1
Represent the NGO sector	1	1
Represent academia in public health	2	1
Represent the community	1	0
CPH management	1	0
Total	12	7

The following strategy was applied to a purposive sampling of workshop participants:

Potential participants were identified in a work meeting by the College faculty.

Senior academics visited each of the potential participants to inform, explain and obtain commitment to contribute to the planned workshop.

A formal invitation letter from the Dean was sent to each planned participant.

An information package was mailed to orient participants on the workshop and its context.

Terms of Reference were developed and mailed to participants including specifications on incentives.

An introductory meeting was organised at the College of Public Health, Chulalongkorn University, to introduce the need assessment and to get acquainted with one another.

Despite careful preparation two MOPH representatives, one politician representing the community and one academic apologised due to tight schedules.

B. Mailed Questionnaire

A purposive sampling was applied aiming at a representation of the four main constituencies' i.e. Public Health Professionals, Public Administrators, Academics and representatives of the Ministry of Public Health under following criteria:

1. 12 of the 13 MOPH regions, except Bangkok Metropolitan, were included
2. Within the 12 regions, the province with the highest population
3. Within each province the:
 - Provincial Health Office
 - Public general referral hospital
 - Community hospital with the largest bed capacity
 - Private hospital with the largest bed capacity as listed in the directory of the Association of Private Hospitals in Thailand
 - Provincial Administration Office
 - Central (muang) Municipal Administration Office
4. Within the regions:
 - First class Sub-district Administration Offices (the top 24 in terms of budget)

- 12 national and 12 international NGOs listed in the directory of the MOPH or the NGO directory of Thailand. Each organisation needed to be active in public health for at least 5 years and implementing health promotion and or prevention programs.
5. All academics involved in postgraduate education in public health whether academic or professional public health programs from following universities:
- Chiangmai,
 - Chulalongkorn,
 - Khon Kean,
 - Mahidol.
6. From the MOPH
- All 12 Regional Inspectors
 - All 12 Regional Medical Supervisors
 - Members of the PBRI institute that are involved in human resource development for public health
 - The Director of the Health and System Research Institute (HSRI)
 - The Director of the Health System Reform Office (HSRO)
 - One Deputy Permanent Secretary involved in the development of the Learning at the Workplace Program
 - One Assistant Permanent Secretary involved in approving the Learning at the Workplace Program.

However, a personal communication from representatives of the MOPH (3 April 2001) and a report on an opinion poll in the Chulalongkorn University Newsletter (2001) indicated that response rates to mailed questionnaires are usually very low (10 and 17.8%) in Thailand. Therefore, the original sample size was increased from 276 to 372, by sending the

questionnaire to the Public Health Professionals and Public Administrators in the two largest provinces within each region (increasing from 12 to 24 provinces).

Letters from Dr. Mongkhol N. Songkhla, the Permanent Secretary of MOPH, from Associate Professor Wattana S. Janjaroen, then, the Acting Dean of the College of Public Health, Chulalongkorn University, supported this mailing. Mail questionnaires included a self addressed and stamped return envelope. Phone, local contact persons, and personal contacts were used in follow-up.

To increase the power of the analysis and validate findings from the first mailing, a second mailing of the same questionnaire (including guidelines and consent form) was conducted. This mailing was to Public Health Professionals and Public Administrators in the remaining 51 provinces in Thailand, increasing the total sample from 372 to 657. The same questionnaire was sent with a letter from Dr. Samlee Plianbangchang, Dean of the College of Public Health, Chulalongkorn University. Two weeks later, a thank you and reminder letter was sent for both 1st and 2nd mailing wave.

The responses from the first and second mailing were separately entered in computer compatible format; with a randomly selected sample validated by double entry. This data was analysed using the SPSS program to determine Frequencies, Percentages, Means and Standard Deviations. For summations of Public Health Services and Levels of Public Health Staff involvement ANOVA was used to determine statistical significant differences between all four (4) Constituencies. If a statistical significant difference was found Scheffé's method was applied to specify which of the Constituencies were responsible for the overall statistical significant difference. Further for each item in the questionnaire, Chi-square was used. Testing was done for the two largest groups of respondents (Public Health Professionals 119 and Public Administrators 74); the other two groups were too small for valid analysis by Chi-square. Because multiple tests of significance were done, only those associations with a p value < 0.01 were considered to be significant.

Sample Plan of the Mailed Questionnaire

Constituencies	1 st Mailing			2 nd Mailing			Total		
	Mailed	Response	%	Mailed	Response	%	Mailed	Response	%
Public health professionals									
Provincial Chief Medical Officers	24	11	45.8	51	31	60.8	75	42	56.0
Directors Provincial General Hospitals	24	9	37.5	51	28	54.9	75	37	49.3
Directors Community Hospitals	24	6	25.0	51	20	39.2	75	26	34.7
Directors Private Hospitals	24	6	25.0	33	5	15.2	57	11	19.3
Managers IO/NGO	24	3	12.5	0	0	0.0	24	3	12.5
Sub-total	120	35	29.2	186	84	45.2	306	119	38.9
Public Administrators									
Provincial Administrators	24	12	50.0	51	16	31.4	75	28	37.3
Municipality Administrators	24	10	41.7	51	28	54.9	75	38	50.7
1 st Class Sub-district Administrators	24	8	33.3	0	0	0.0	24	8	33.3
Sub-total	72	30	41.7	102	44	43.1	174	74	42.5
MOPH									
Regional Inspectors	12	2	16.7	0	0	0.0	12	2	16.7
Regional Medical Supervisors	12	2	16.7	0	0	0.0	12	2	16.7
PBRI	8	5	62.5	0	0	0.0	8	5	62.5
Director HSRI	1	1	100	0	0	0.0	1	1	100
Director HSRO	1	0	0.0	0	0	0.0	1	0	0.0
Deputy Permanent Secretary	1	0	0.0	0	0	0.0	1	0	0.0
Assistant Permanent Secretary	1	0	0.0	0	0	0.0	1	0	0.0
Sub-total	36	10	27.8	0	0	0.0	36	10	27.8
Academics									
Chulalongkorn University	6	6	100	0	0	0.0	6	6	100
Mahidol University	50	5	10.0	0	0	0.0	50	5	10.0
Khon Kean University	35	10	28.6	0	0	0.0	35	10	28.6
Chiangmai University	50	4	8.0	0	0	0.0	50	4	8.0
Sub-total	141	25	17.7	0	0	0.0	141	25	17.7
Total	369	100	27.1	288	128	44.4	657	228	34.7

C. Focus Group Discussions

Provincial Chief Medical Officers

Participants for this Focus Group Discussion were purposively selected. The selection criteria were (1) being Provincial Chief Medical Officer or a representative and (2) from provinces that have a Learning @ the Workplace program being implemented. Out of the six participants invited, five were able to attend the discussion from: Ayutthia, Chonburi, Khon Kean, Roy-Et and Phayao provinces, unfortunately, the provincial Chief Medical Officer of Yasothon province had to cancel at the last minute because of urgent duties.

Selection Criteria:	Participation	
	Planned	Actual
PCMO or Representative of LWP sites		
Chonburi	1	1
Ayutthia	1	1
Phayao	1	1
Khon Kean	1	1
Roy-Et	1	1
Yasothon	1	0
Total	6	5

Students

Four Focus Group Discussions were conducted representing the four implementation sites of Learning @ Workplace namely Ayutthia, Chonburi, Isaan (Khon Kean, Roy-Et and Yasothon) and Phayao provinces. Participants were purposively selected. The selection criteria were (1) being a former or present Learning @ Workplace student, (2) represent one of the three functional levels within the local health system such as provincial, district or sub-district level, (3) represent one of the educational backgrounds within their learning group, (4) represent a province in which the Learning @ Workplace program is being implemented. Further, whenever possible, gender parity was aimed at. Each group had 6 to 8 participants.

Selection Criteria: LWP sites	Participation											
	Planned						Actual					
	Chonburi-I	Chonburi-II	Ayuthia	Phayao	Isaan	Total	Chonburi-I	Chonburi-II	Ayuthia	Phayao	Isaan	Total
Health	4	4	7	6	7	28	4	4	6	6	7	27
Non-Health	4	2	0	1	0	7	4	2	0	1	0	7
Provincial	3	3	1	3	2	12	3	3	1	3	2	12
District	3	2	5	4	4	18	3	2	4	4	4	17
Sub-District	2	1	1	0	1	5	2	1	1	0	1	5
Female	4	5	5	5	3	22	4	5	4	5	3	21
Male	4	1	2	2	4	13	4	1	2	2	4	13
Total	8	6	7	7	7	35	8	6	6	7	7	34

D. Semi-structured Interview

The semi-structured interviews were an alternative strategy to replace a prior planned workshop with the Public Health Expert Panel. Three consecutive attempts to organise the workshop failed due to the members' tight schedules.

Selection Criterion	Participation	
	Planned	Actual
Representing the MOPH	1	1
Represent MOPH regions	3	2
Represent the private health sector	1	1
Represent the NGO sector	1	1
Represent academia in public health	2	2
Total	8	7

E. Provincial Public Health Professional Panel

This panel was organised to validate a final judgement on required Levels of Mastery for the 3 Staff categories on these Skills for which the mailed questionnaire was not conclusive, as well as the identification of a Target Group for the LWP.

Panel members were identified under following criteria:

- Being PCMO in a former or current LWP site
- Represent the Provincial Health Office of a former or current LWP site
- Being a member of the Public Health Expert Panel

Selection Criterion	Participation	
	Planned	Actual
Chonburi	2	5
Ayutthia	1	1
Phayao	1	1
Khon Kean	1	1
Roy-Et	1	1
Yasothon	1	0
Trang	1	1
Krabi	1	1
Nakhon Sri Thamaraj	1	1
Pathalung	1	0
Representing the MOPH	1	1
Represent MOPH regions	2	0
Represent the private health sector	1	1
Represent the NGO sector	1	0
Represent academia in public health	1	1
Total	17	15

E. National Public Health Professional Panel

Participants were purposively selected and consisted of (1) professionals that represented the (2) main public health related disciplines such as:

- (1) MOPH representatives or those actively involved in provincial health system development, or in the private health sector, or in the NGO sector, or an academic in public health in case no professional participant was available representing a specific discipline as listed in (2) below.

- (2) Epidemiology, bio-statistics, social and behavioural sciences, policy and planning, management, human resources development, health financing and environmental public health.

In total 13 candidate participants were identified.

Selection Criterion	Participation			
	Planned		Actual	
	Question	Workshop	Question	Workshop
Epidemiology (MOPH)	2	2	2	0
Bio-statistics (MOPH)	1	1	0	0
Bio-statistics (Academic)	0	0	1	1
Policy and Planning (MOPH)	2	2	2	1
Management (MOPH)	2	2	2	0
Management (Private)	1	1	1	1
Human Resource Development	1	1	1	1
Health Financing	1	1	1	0
Social Science (NGO)	1	1	1	0
Social Science (Academic)	0	0	0	1
Behavioural Science (MOPH)	1	1	0	0
Behavioural Science (Academic)	1	1	1	1
Environmental Sc. (MOPH)	1	1	0	0
Environmental Sc. (Academic)	1	1	1	1
Total	15	15	13	7

F. Educational Review Panel

A purposive sampling was applied in identifying participants for an expert review panel. The study purpose guided sampling criteria. The aim was to (1) review a draft Relevance Assessment Tool for the Learning @ the Workplace Program, (2) to critically appraise the revised tool by applying a prospective evaluation and (3) to modify as required after field testing of the tool.

Therefore, following criteria were used: (1) being an educational expert, (2) being actively involved in postgraduate public health education or (3) by function represent a partner in the Learning @ the Workplace Program.

(1) Educational experts: academics with a background and experience in adult learning, program evaluation, or public health education at a postgraduate level.

(2) Public health experts: academics with a background in public health related disciplines and actively involved in postgraduate public health education.

(3) Learning @ the Workplace partners: represent the PBRI (MOPH) and be actively involved in the education program.

Degree	Expertise	Planned	Actual
Ph.D. Education	Education Science	1	1
Ph.D. Education	Instructional System Technology	1	1
Dr.PH. Public Health	Public Health Education	1	1
Dr.PH. Public Health	Environmental Health	1	1
MSc. Med. Anthropology	Qualitative research methods	1	1
MSc. Bio-statistics	Quality Assurance/measurement	1	1
Ph.D. Health Economics	Strategic Management	1	1
MSc. Information Science	Information Systems	1	1
MPH Health System Development	Learning @ the Workplace partner	1	1
Total		9	9

G. Evaluation

For the LWP evaluation following data collection methods were applied: (1) Questionnaires for faculty and students, (2) in-depth interviews for partners and faculty, (3) focus group discussions for PCMO and students.

The sample plane for each method was as follows:

Method	Planned					Actual				
	MOPH	PCMO	Students	Faculty	Total	MOPH	PCMO	Students	Faculty	Total
Questionnaire	0	0	70	6	76	0	0	61	6	67
Interview	4	0	0	3	7	2	0	0	3	5
Focus Group	0	6	35	0	41	0	5	34	0	39

Appendix-III

Validity and Reliability Testing

A. Validity

The focus in measurement validity applied in this study is on face and content validity.

- a) Face validity looks at the application of the constructs of Public Health Services and Competencies, to check whether it is a good translation of the constructs.
- b) Content validity is essentially used to check the application against the relevant content domain of the constructs.

Mailed Questionnaire Section-1 Public Health Services

This section is the product of the Public Health Functions Steering Committee USA (1995) that was adopted by the Public Health Expert Panel, who then, added one more service (Planning and Management) to arrive at a set appropriate for Thailand. The list of eleven services was not intended to be exhaustive. Respondents were given the opportunity to include other services that they found important as well.

Mailed Questionnaire Section-2 Public Health Competencies

This section consists of a questionnaire developed by the Council on Linkages between Academia and Public Health Workforce (1998) and is based on an extensive literature review. The list has been used as a research tool within the USA and on Internet and has been field-tested and validated.

Because Section-1 was locally modified and Section-2 was translated from English into Thai and definitions were modified to suit the Thai context, validity needed to be checked. The questionnaire was submitted to three Thai experts in public health, with the request to comment in terms of face and content validity.

Based on the comments, modifications were made to improve clarity of translation of some technical terminology, as well as improved guidelines to ensure validity.

Focus Group Discussion Protocols

Design of the protocols was based on guidelines provided by the literature (Krueger, Casey, 2000). Protocols were translated from English into Thai to suit the Thai participants; therefore, validity needed to be checked. The English version was submitted to an academic involved in developing the LWP program. The Thai version of the protocols were submitted to a Thai faculty member teaching in the LWP and a Thai professional partner of the LWP, with the request to comment in terms of face and content validity.

Based on the comments, few modifications were made to improve clarity of translation of some terminology to ensure validity.

Semi-structured Interviews

For these interviews two sections were used: (1) a questionnaire and (2) a framework with open-ended questions, developed by the Investigator (Marc Van der Putten). Both sections were developed in English and did not need translation into Thai. Both sections were submitted to two Thai researchers who are proficient in English and well exposed to the study, with the request to comment in terms of face and content validity.

Based on the comments, few modifications were made to improve clarity of the layout as well as some improvement in the guidelines to ensure validity.

In-depth Interviews

For these interviews a framework with open-ended questions, developed by the Investigator (Marc Van der Putten) was used. Questions were developed in English and did not need translation into Thai. The framework was, then, submitted to two academics that had experience with the LWP, with the request to comment in terms of face and content validity.

Based on the comments, no modifications were needed.

Student and faculty questionnaire

Because both questionnaires were translated from English into Thai and definitions were modified to suit the Thai context, validity needed to be checked. The questionnaire was submitted to three Thai experts in public health, with the request to comment in terms of face and content validity.

Based on the comments, modifications were made to improve clarity of translation of some technical terminology, as well as improved guidelines to ensure validity.

B. Reliability

Only those reliability tests for which no details were provided in Chapter-II are presented in this Appendix.

Mailed Questionnaire

A pre-test was done, under the supervision of research assistants, among 10 respondents (5 MOPH employees and 5 Learning @ Workplace students) to further improve the questionnaire. Based on the comments, modifications were made in descriptions of some skills and some definitions as to improve appropriateness of vocabulary.

The Cronbach's test was used on the total sample, to check internal consistency, and yielded the following coefficients:

Cronbach's Test	
For Section -1 on Public Health Services:	
Public Health Services	$\alpha = .78$
Level of Responsibility:	
Front-line Staff	$\alpha = .84$
Mid-level Management Staff	$\alpha = .81$
Top-level Management Staff	$\alpha = .84$
For Section -2 on the Level of Mastery in Competency Domains:	
Front-line Staff	$\alpha = .98$
Mid-level Management Staff	$\alpha = .98$
Top-level Management Staff	$\alpha = .98$

In-depth Interviews

Inter-analyst comparisons were used to avoid possible interpretation bias. In the content analyses, the inter-analyst reliability by the Holsti's test showed a Coefficient of Reliability = 0.94 and by Cohen's kappa = 0.86.

Appendix-IV

Analysis of the Mailed Questionnaire

A. Analysis on Levels of Current Performance of Public Health Services

For individual Public Health Services frequencies and proportions were used in the analysis. An ordinal scale of three (3) levels on current performance of Public Health Services was used and frequencies indicated a possible response bias for the satisfactory level. Therefore an arbitrary key in the analysis of frequencies and proportions was applied based on the rationale of 1 change in 3 resulting in following key: weakness $\geq 33.3\%$, satisfactory $\geq 66.6\%$, strength $\geq 33.3\%$.

For the total set of Public Health Services the mean was used. The range of the mean for each level of current performance is presented below in Table-IV.1.

Also 'item non-response' was analysed for Section-1 on Public Health Services. Table-IV-2 shows results on 'item non-response', which shows a pattern among Administrators and Academics.

B. Analysis on the Level of Involvement of Public Health Professionals in Public Health Services

For the Levels of Involvement of by Level of Staff in each of the Public Health Services, frequencies and proportions were used in the analysis. Although, an ordinal scale of three (3) levels on the levels of involvement in Public Health Services, an initial examination of findings pointed out that it is appropriate to apply majority proportions in the analysis. Therefore, the criterion $\geq 50\%$ was used in the analysis of Levels of Involvement.

For the overall Level of Involvement by Level of Staff in Public Health Services the mean was used. The range of the mean for each level of current performance is presented below in Table-IV.1.

Also 'item non-response' was analysed for Section-1 on Public Health Services. Table-IV-2 shows results on 'item non-response', which shows a pattern among Administrators and Academics.

C. Analysis on the required Level of Mastery in Competency Domains

For the required Levels of Mastery in each Skill within Public Health Competency Domains frequencies and proportions were used in the analysis. Because a four (4) point scale was used namely: (a) not a core competency, (b) awareness, (c) knowledgeable, (d) proficiency, the analysis of levels of mastery in each skill was based on the majority proportions, using the criterion $\geq 50\%$ for levels of mastery in each single skill.

For the Level of Mastery for each of the 70 specific Skills in Public Health Competency Domains, by Constituencies, the weighted-mean was used. The range of the mean for each Level of Mastery is presented below in Table-IV.1.

Also Item non-response was analysed for Section-2 on Public Health Competencies. Table-IV-3 shows results on 'item non-response', which shows a pattern among Administrators and Academics.

D. Range of mean

The mean for (1) judgements on the current overall Level of Performance on Public Health Services, (2) judgements on the overall Level of Involvement of professional groups in these Public Health Services and (3) the weighted-mean for judgements on the required Level of Mastery for each Skill in Public Health Competency Domains were classified into the following ranges:

Table-IV.1: Range of Mean for Levels of Current Performance and Involvement Public Health Services and Level of Mastery in Public Health Competencies

Variables	Levels of performance, involvement & mastery	Range of mean
Current Performance Level of Public Health Services	Weakness	1.00-1.66
	Satisfactory	1.67-2.33
	Strength	2.34-3.00
Level of Involvement by Level of Staff in Public Health Services	Not involved	1.00-1.66
	Participates	1.67-2.33
	Responsible	2.34-3.00
Required Level of Mastery in Public Health Competencies	Not a core competency	0.00-0.99
	Awareness	1.00-1.66
	Knowledgeable	1.67-2.33
	Proficiency	2.34-3.00

Summations of the mean for (1) all Public Health Services, (2) each Level of Involvement per Level of Public Health Staff facilitated the application of the ANOVA and the Scheffé test.

Table-IV.2: Item Non-response Rates on Public Health Services by Constituency

No.	Services	Group	Performance			Involvement					
			Response	Missing	%	Front-line		Mid-level		Top-level	
						Missing	%	Missing	%	Missing	%
1	Monitor	Professionals	119	1	0.8	0	0.0	3	2.5	6	5.0
		Administrators	74	2	2.7	3	4.1	5	6.8	6	8.1
		Academics	25	3	12.0	3	12.5	6	24.0	5	20.0
		MOPH	10	1	10.0	0	0.0	0	0.0	0	0.0
2	Diagnose & Investigate	Professionals	119	2	1.7	0	0.0	3	2.5	5	4.2
		Administrators	74	2	2.7	4	5.4	6	8.1	8	10.8
		Academics	25	3	12.0	4	16.0	7	28.0	5	20.0
		MOPH	10	0	0.0	0	0.0	0	0.0	1	10.0
3	Disseminate Information	Professionals	119	3	2.5	3	2.5	4	3.4	4	3.4
		Administrators	74	2	2.7	5	6.8	6	8.1	8	10.8
		Academics	25	1	4.0	3	12.0	5	20.0	4	16.0
		MOPH	10	0	0.0	0	0.0	0	0.0	0	0.0
4	Policy Development	Professionals	119	4	3.4	7	5.9	5	4.2	3	2.5
		Administrators	74	4	5.4	6	8.1	8	10.8	6	8.1
		Academics	25	1	4.0	5	20.0	4	16.0	3	12.0
		MOPH	10	1	10.0	0	0.0	0	0.0	0	0.0
5	Partnerships	Professionals	119	1	0.8	2	1.7	3	2.5	2	1.7
		Administrators	74	6	8.1	7	9.5	7	9.5	8	10.8
		Academics	25	3	12.0	3	12.0	3	12.0	2	9.5
		MOPH	10	0	0.0	0	0.0	1	10.0	1	10.0
6	Planning and management	Professionals	119	2	1.7	4	3.4	5	4.2	4	3.4
		Administrators	74	5	6.8	7	9.5	5	6.8	8	10.8
		Academics	25	5	20.0	5	20.0	5	20.0	4	16.0
		MOPH	10	1	10.0	0	0.0	0	0.0	0	0.0

Table-IV.2: Item Non-response Rates on Public Health Services by Constituency (Cont.)

No.	Services	Group	Performance			Involvement					
			Response	Missing	%	Front-line		Mid-level		Top-level	
						Missing	%	Missing	%	Missing	%
7	Enforce Laws	Professionals	119	1	0.8	3	2.5	6	5.0	4	3.4
		Administrators	74	3	4.1	4	5.4	6	8.1	8	10.8
		Academics	25	2	8.0	3	12.0	3	12.0	2	8.0
		MOPH	10	0	0.0	0	0.0	0	0.0	0	0.0
8	Assure Human Resources	Professionals	119	1	0.8	2	1.7	3	2.5	5	4.2
		Administrators	74	4	5.4	8	10.8	6	8.1	6	8.1
		Academics	25	3	12.0	4	16.0	4	16.0	3	12.0
		MOPH	10	0	0.0	0	0.0	0	0.0	0	0.0
9	Access to services	Professionals	119	2	1.7	0	0.0	4	3.4	4	3.4
		Administrators	74	4	5.4	5	6.8	5	6.8	8	10.8
		Academics	25	2	8.0	3	12.0	5	20.0	5	20.0
		MOPH	10	0	0.0	0	0.0	0	0.0	0	0.0
10	Evaluation	Professionals	119	4	3.4	1	0.8	2	1.7	3	2.5
		Administrators	74	4	5.4	10	13.5	7	9.5	9	12.2
		Academics	25	2	8.0	4	16.0	4	16.0	3	12.0
		MOPH	10	0	0.0	0	0.0	0	0.0	0	0.0
11	Research	Professionals	119	4	3.4	1	0.8	3	2.5	5	4.2
		Administrators	74	5	6.8	8	10.8	7	9.5	7	9.5
		Academics	25	2	8.0	3	12.0	3	12.0	2	8.0
		MOPH	10	0	0.0	0	0.0	0	0.0	0	0.0

Legend: Constituencies that have >10% item non-responses

Performance of Public health Services

Data may indicate that Academics do not know exactly current performances of Public Health Services. They may know more on the performances that relate to the academic field, i.e. Disseminate Information, Policy Development, Evaluation and Research.

Involvement in Public Health Services

Data may indicate that Academics do not know exactly the involvement of Front-line and Mid-level Management Staff. This could be because respondents of 2 Universities out of 4 are involved international programs and, therefore, there is the likelihood that they have less direct contact with these 2 groups of public health staff.

The missing values of each item are no more than 10% for Professionals and MOPH representatives. This shows that they are the internal stakeholders, therefore, knowing Public Health Services better than other constituencies.

Data on Administrators (also outsiders) indicate that they have less insight in some services.

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
1.1	Identify responsibilities within public health.	Professionals	119	0.8	2.5	2.5
		Administrators	74	4.1	9.5	6.8
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
1.2	Use basic qualitative and quantitative research methods.	Professionals	119	8.4	4.2	5.0
		Administrators	74	8.1	6.8	12.2
		Academics	25	12.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
1.3	Apply basic public health sciences.	Professionals	119	3.4	5.0	5.0
		Administrators	74	5.4	5.4	9.5
		Academics	25	8.0	12.0	0.0
		MOPH	10	0.0	0.0	0.0
1.4	Assess the health status of populations.	Professionals	119	0.8	1.7	3.4
		Administrators	74	5.4	6.8	9.5
		Academics	25	8.0	4.0	4.0
		MOPH	10	0.0	0.0	0.0
1.5	Apply critical thinking.	Professionals	119	11.8	2.5	4.2
		Administrators	74	16.2	12.2	16.2
		Academics	25	16.0	8.0	4.0
		MOPH	10	0.0	10.0	0.0
1.6	Identify and access current scientific evidence.	Professionals	119	9.2	5.0	6.7
		Administrators	74	5.4	9.5	12.2
		Academics	25	8.0	16.0	8.0
		MOPH	10	10.0	20.0	20.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
1.7	Identify limitations of research.	Professionals	119	14.3	4.2	3.4
		Administrators	74	12.2	12.2	14.9
		Academics	25	12.0	12.0	0.0
		MOPH	10	10.0	0.0	0.0
1.8	Apply risk assessment.	Professionals	119	11.8	4.2	3.4
		Administrators	74	9.5	9.5	13.5
		Academics	25	12.0	8.0	0.0
		MOPH	10	10.0	0.0	0.0
1.9	Use public health information packages.	Professionals	119	14.3	5.9	8.4
		Administrators	74	14.9	17.6	25.7
		Academics	25	12.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
1.10	Design a surveillance system.	Professionals	119	16.8	5.9	10.1
		Administrators	74	17.6	14.9	21.6
		Academics	25	16.0	8.0	0.0
		MOPH	10	20.0	0.0	0.0
1.11	Operate a surveillance system.	Professionals	119	5.9	6.7	10.9
		Administrators	74	10.8	16.2	21.6
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
1.12	Use computer applications.	Professionals	119	6.7	6.7	7.6
		Administrators	74	9.5	13.5	18.9
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
1.13	Apply ethical conduct.	Professionals	119	5.0	6.7	6.7
		Administrators	74	6.8	9.5	13.5
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
2.1	Define a problem.	Professionals	119	5.0	3.4	3.4
		Administrators	74	6.8	10.8	12.2
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	10.0
2.2	Determine use and limitations of data.	Professionals	119	5.9	3.4	5.0
		Administrators	74	8.1	9.5	14.9
		Academics	25	8.0	8.0	4.0
		MOPH	10	10.0	0.0	0.0
2.3	Select variables.	Professionals	119	5.9	4.2	5.9
		Administrators	74	10.8	9.5	12.2
		Academics	25	4.0	8.0	0.0
		MOPH	10	20.0	10.0	10.0
2.4	Use basic qualitative and quantitative designs and methods.	Professionals	119	8.4	3.4	5.9
		Administrators	74	9.5	8.1	13.5
		Academics	25	12.0	8.0	0.0
		MOPH	10	10.0	0.0	10.0
2.5	Partner with communities.	Professionals	119	1.7	5.0	10.1
		Administrators	74	8.1	10.8	14.9
		Academics	25	4.0	4.0	8.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
2.6	Use appropriate data collection process.	Professionals	119	5.0	6.7	10.9
		Administrators	74	9.5	10.8	16.2
		Academics	25	12.0	8.0	8.0
		MOPH	10	10.0	0.0	20.0
2.7	Make relevant inferences from data.	Professionals	119	3.4	5.9	7.6
		Administrators	74	8.1	9.5	13.5
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
2.8	Identify data and information sources.	Professionals	119	4.2	6.7	8.4
		Administrators	74	6.8	9.5	13.5
		Academics	25	4.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
2.9	Apply ethical principles.	Professionals	119	3.4	4.2	6.7
		Administrators	74	5.4	8.1	12.2
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	10.0
2.10	Evaluate data.	Professionals	119	2.5	4.2	5.9
		Administrators	74	6.8	4.1	12.2
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	10.0
2.11	Illuminate issues from data.	Professionals	119	14.3	4.2	5.0
		Administrators	74	13.5	8.1	10.8
		Academics	25	16.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
2.12	Interpret information about risks to the community.	Professionals	119	5.9	4.2	5.0
		Administrators	74	6.8	6.8	9.5
		Academics	25	4.0	4.0	4.0
		MOPH	10	10.0	10.0	10.0
3.1	Collect and interpret information relevant to an issue.	Professionals	119	6.7	2.5	5.0
		Administrators	74	8.1	6.8	9.5
		Academics	25	12.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
3.2	State policy options.	Professionals	119	10.9	2.5	4.2
		Administrators	74	9.5	5.4	6.8
		Academics	25	20.0	12.0	4.0
		MOPH	10	10.0	0.0	0.0
3.3	Articulate implications of policy options.	Professionals	119	13.4	2.5	4.2
		Administrators	74	8.1	4.1	8.1
		Academics	25	16.0	8.0	4.0
		MOPH	10	30.0	0.0	0.0
3.4	State the expected outcome of policy options.	Professionals	119	9.2	3.4	5.9
		Administrators	74	9.5	5.4	8.1
		Academics	25	16.0	12.0	4.0
		MOPH	10	10.0	0.0	0.0
3.5	Decide on the appropriate course of action.	Professionals	119	10.1	2.5	5.9
		Administrators	74	9.5	8.1	10.8
		Academics	25	8.0	8.0	0.0
		MOPH	10	10.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
3.6	Utilise techniques in decision analysis and planning.	Professionals	119	9.2	3.4	5.0
		Administrators	74	2.7	4.1	8.1
		Academics	25	12.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
3.7	Identify policies related to specific programs.	Professionals	119	13.4	2.5	5.0
		Administrators	74	5.4	4.1	8.1
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
4.1	Interact sensitivity, effectively and professionally.	Professionals	119	0.8	4.2	5.0
		Administrators	74	5.4	4.1	6.8
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
4.2	Identify the role of cultural factors in delivery of services.	Professionals	119	4.2	4.2	5.9
		Administrators	74	10.8	8.1	12.2
		Academics	25	4.0	4.0	0.0
		MOPH	10	10.0	10.0	10.0
4.3	Develop problem solving that fits cultural differences.	Professionals	119	5.0	4.2	5.9
		Administrators	74	10.8	8.1	10.8
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
5.1	Prepare and implement emergency plans.	Professionals	119	7.6	3.4	5.0
		Administrators	74	6.8	8.1	10.8
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
5.2	Develop plans.	Professionals	119	10.1	5.0	5.9
		Administrators	74	6.8	8.1	12.2
		Academics	25	12.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
5.3	Translate policy into organisational plans.	Professionals	119	9.2	2.5	5.0
		Administrators	74	8.1	8.1	12.2
		Academics	25	20.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
5.4	Monitor and evaluate programs.	Professionals	119	10.9	2.5	4.2
		Administrators	74	10.8	8.1	12.2
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
5.5	Conduct cost-effectiveness-benefit-utility analyses.	Professionals	119	10.1	2.5	3.4
		Administrators	74	12.2	12.2	12.2
		Academics	25	20.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
5.6	Apply theory of organisation.	Professionals	119	9.2	3.4	5.0
		Administrators	74	10.8	8.1	14.9
		Academics	25	12.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
5.7	Contribute to organisational performance standards.	Professionals	119	10.1	2.5	4.2
		Administrators	74	13.5	10.8	12.2
		Academics	25	4.0	8.0	4.0
		MOPH	10	10.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
5.8	Promote team learning and organisation learning.	Professionals	119	5.0	2.5	4.2
		Administrators	74	9.5	9.5	14.9
		Academics	25	12.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
5.9	Create key values and shared vision.	Professionals	119	5.0	3.4	4.2
		Administrators	74	8.1	6.8	13.5
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
5.10	Identify issues through strategic planning.	Professionals	119	8.4	2.5	4.2
		Administrators	74	14.9	9.5	14.9
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
5.11	Use appropriate methods that effect change.	Professionals	119	7.6	2.5	4.2
		Administrators	74	12.2	9.5	12.2
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
5.12	Ensure participation of key stakeholders.	Professionals	119	5.0	4.2	5.9
		Administrators	74	4.1	4.1	9.5
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	10.0
5.13	Create a culture of ethical standards.	Professionals	119	5.9	4.2	6.7
		Administrators	74	8.1	6.8	9.5
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
6.1	Communicate effectively.	Professionals	119	2.5	4.2	5.0
		Administrators	74	4.1	4.1	8.1
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
6.2	Solicit input from individuals and organisations.	Professionals	119	4.2	5.9	5.9
		Administrators	74	5.4	4.1	8.1
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
6.3	Advocate for public health.	Professionals	119	10.9	4.2	5.9
		Administrators	74	9.5	5.4	9.5
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
6.4	Lead and participate in-groups.	Professionals	119	7.6	5.0	6.7
		Administrators	74	8.1	6.8	9.5
		Academics	25	12.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
6.5	Use appropriate channels to communicate information.	Professionals	119	4.2	5.0	6.7
		Administrators	74	6.8	6.8	9.5
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
6.6	Listen to others in an unbiased manner.	Professionals	119	3.4	4.2	5.0
		Administrators	74	6.8	5.4	8.1
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
6.7	Make effective presentations.	Professionals	119	2.5	5.0	5.0
		Administrators	74	6.8	5.4	9.5
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
7.1	Maintain linkages with key stakeholders.	Professionals	119	3.4	6.7	6.7
		Administrators	74	5.4	4.1	10.8
		Academics	25	4.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
7.2	Collaborate with community partners.	Professionals	119	2.5	5.9	6.7
		Administrators	74	8.1	8.1	10.8
		Academics	25	4.0	4.0	0.0
		MOPH	10	10.0	0.0	0.0
7.3	Mobilise organisations within the community.	Professionals	119	5.9	5.9	5.0
		Administrators	74	8.1	5.4	8.1
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
7.4	Use management skills to build partnerships.	Professionals	119	3.4	2.5	3.4
		Administrators	74	8.1	4.1	8.1
		Academics	25	12.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
7.5	Identify community resources.	Professionals	119	3.4	2.5	5.0
		Administrators	74	5.4	5.4	8.1
		Academics	25	4.0	8.0	8.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
7.6	Conduct a community assessment.	Professionals	119	4.2	2.5	4.2
		Administrators	74	5.4	4.1	6.8
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
8.1	Develop and present a budget.	Professionals	119	8.4	3.4	4.2
		Administrators	74	8.1	4.1	9.5
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
8.2	Manage programs without budget constraints.	Professionals	119	6.7	4.2	5.9
		Administrators	74	10.8	4.1	8.1
		Academics	25	8.0	8.0	4.0
		MOPH	10	0.0	0.0	0.0
8.3	Apply budget processes.	Professionals	119	7.6	4.2	5.9
		Administrators	74	10.8	4.1	8.1
		Academics	25	4.0	4.0	0.0
		MOPH	10	30.0	10.0	10.0
8.4	Determine budget priorities.	Professionals	119	7.6	3.4	5.0
		Administrators	74	10.8	4.1	9.5
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0
8.5	Monitor program performance.	Professionals	119	10.9	5.0	5.0
		Administrators	74	12.2	5.4	9.5
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0

Table-VI.3: Item Non-response Rates on Public Health Skills by Constituency (Cont.)

No.	Public Health Skills	Group	Response	Front-line	Mid-level	Top-level
				%	%	%
8.6	Develop proposals for funding.	Professionals	119	9.2	5.0	7.6
		Administrators	74	9.5	5.4	12.2
		Academics	25	12.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
8.7	Apply basic human relation skills.	Professionals	119	1.7	3.4	5.0
		Administrators	74	2.7	4.1	9.5
		Academics	25	4.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
8.8	Manage information systems for decision-making.	Professionals	119	1.7	3.4	5.0
		Administrators	74	4.1	5.4	10.8
		Academics	25	8.0	4.0	0.0
		MOPH	10	0.0	0.0	0.0
8.9	Apply ethical conduct in practice.	Professionals	119	2.5	4.2	5.0
		Administrators	74	4.1	4.1	8.1
		Academics	25	8.0	8.0	0.0
		MOPH	10	0.0	0.0	0.0

Legend: Item non-response rate > 10%

Administrators are the only Constituency that scores Item non-response across the 3 Levels of Staff.

Academics have mainly Item non-response scores for Front-line Staff, only a few for Mid-level Management and not a single score for Top-level Management Staff.

Except for Administrators, most Item non-response scores occurred for a single Level of Staff.

Appendix-V

Tests of Significance for the Mailed Questionnaire

The following tests of Statistical Significant Difference were applied for further analysis of questionnaire data:

Section-1: Public Health Services

Analysis of Variance (ANOVA)

ANOVA on Current Performance of Public Health Services as Considered by Constituencies is shown below in Table-V.1.

ANOVA on Involvement in Public Health Services for Public Health Staff, as Considered by Constituencies, is shown below in Table-V.2.

Scheffé Comparison

When ANOVA showed a statistically significant difference, then the Scheffé Comparison was applied to determine which Constituencies showed a contrast. The Scheffé Comparison is the most flexible and most rigorous of the post hoc multiple comparison tests and based on the F distribution. It is a conservative test because it adopts a family-wise error rate that applies to all contrasts, which provides strong protection against Type error I. Scheffé recommended a less stringent level of significance to avoid excess Type error II (Portney and Watkins, 2000). Tables V.1 and V.2 below present results on the Scheffé Comparison.

Section-2: Public Health Competencies

Chi-square

The Chi-square test was applied to every single item in the questionnaire for Public Health Professionals (119) and Administrators (74). For Academics (25) and MOPH-representatives (10) the distribution of frequencies was too low to allow testing as shown in Chapter-II.

Further analysis with the Chi-square test was done for sub-groups within Public Health Professionals and Administrators for both Public Health Services and Skills. Sub-groups within Public Health Professionals and Administrators for further significance testing are represented below and analysis results are presented in Tables-V.3 to 7.

Constituency	No	Sub-groups ¹	No
Professionals	119	PCMO	42
		Non-PCMO	77
		Hospital Directors	63
Administrators	74	PAO	28
		MAO	38
		TAO	8

¹ PCMO: Provincial Chief Medical Officer, Non-PCMO all other Professional respondents, Hospital Directors are a subgroup of Non-PCMO, PAO: Provincial Administrative Office, MAO: Municipality Administrative Office, TAO: Tambol (Sub-district) Administrative Office.

Table-V.1: ANOVA on Current Performance of Public Health Services as Considered by All Constituencies

Services	Group	\bar{X}	S.D.	p	Scheffé
Current Performance of Public Health Services	Professionals	1.70	0.32	0.011	-
	Administrators	1.83	0.34		
	Academics	1.64	0.27		
	MOPH	1.65	0.27		

Table-V.2: ANOVA on Involvement in Public Health Services for Public Health Staff as Considered by All Constituencies

Services	Group	Front-line Staff				Mid-level Management Staff				Top Management Staff			
		\bar{X}	S.D.	p	Scheffé	\bar{X}	S.D.	p	Scheffé	\bar{X}	S.D.	p	Scheffé
Involvement in Public Health Services	Professionals	2.05	0.34	0.003	Professionals Vs. Academics	2.34	0.41	0.315	-	2.50	0.51	0.389	-
	Administrators	2.19	0.38			2.38	0.34			2.50	0.43		
	Academics	2.34	0.43			2.45	0.39			2.51	0.35		
	MOPH	2.08	0.18			2.54	0.21			2.76	0.23		

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
1.1	Identify responsibilities within public health.	Professionals	0	0	1	0.8	1	0.8	12	10.2	71	60.2	35	29.7	118	99.2	0.565
		PCMO	0	0	0	0	0	0	2	4.8	26	61.9	14	27.6	42	100	
		Non-PCMO	0	0	1	1.3	1	1.3	10	13.2	45	59.2	21	27.6	76	98.7	
1.2	Use basic qualitative and quantitative methods.	Professionals	1	0.8	9	7.6	10	8.4	7	6.4	52	47.4	50	45.9	109	91.6	0.665
		PCMO	1	2.4	0	0	1	2.4	2	4.9	19	46.3	20	48.8	41	97.6	
		Non-PCMO	0	0	9	11.7	9	11.7	5	7.4	33	48.5	30	44.1	77	88.3	
1.3	Apply basic public health sciences.	Professionals	0	0	4	3.4	4	3.4	22	19.1	61	53.0	32	27.8	115	96.6	0.165
		PCMO	0	0	2	4.8	2	4.8	7	17.5	21	52.5	12	30.0	40	95.2	
		Non-PCMO	0	0	2	2.6	2	2.6	15	20.0	40	53.3	20	26.7	75	97.4	
1.4	Assess the health status of populations.	Professionals	0	0	1	0.8	1	0.8	21	17.8	57	48.3	40	33.9	118	99.2	0.376
		PCMO	0	0	1	2.4	1	2.4	7	17.1	23	56.1	11	26.8	41	97.6	
		Non-PCMO	0	0	0	0	0	0	14	18.2	34	44.2	29	37.7	77	100	
1.5	Apply critical thinking.	Professionals	1	0.8	13	10.9	12	11.7	9	8.6	46	43.8	50	47.6	105	88.2	0.404
		PCMO	0	0	5	11.9	5	11.9	2	5.4	15	40.5	20	54.1	37	88.1	
		Non-PCMO	1	1.3	8	10.4	9	11.7	7	10.3	31	45.6	30	44.1	68	88.3	
1.6	Identify scientific evidence.	Professionals	3	2.5	8	6.7	11	9.2	14	13.0	47	43.5	47	43.5	108	90.8	0.567
		PCMO	1	2.4	4	9.5	5	11.9	5	11.9	14	33.3	18	42.9	37	88.1	
		Non-PCMO	2	2.6	4	5.2	6	7.8	9	11.7	33	42.9	29	37.7	71	92.3	
1.7	Identify limitations of research.	Professionals	1	0.8	16	13.4	17	14.2	9	8.8	33	32.4	60	58.8	102	85.7	0.162
		PCMO	0	0	5	11.9	5	11.9	3	8.1	8	21.6	26	70.3	37	88.1	
		Non-PCMO	1	1.3	11	14.3	12	15.6	6	9.2	25	38.5	34	52.3	65	84.4	
1.8	Apply risk assessment.	Professionals	3	2.5	11	9.2	14	11.7	19	18.1	43	41.0	43	41.0	105	88.2	0.125
		PCMO	1	2.4	5	11.9	6	14.3	7	19.4	10	27.8	19	52.8	36	85.7	
		Non-PCMO	2	2.6	6	7.8	8	10.4	12	17.4	33	47.8	24	34.8	69	89.6	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
1.9	Use public health information packages.	Professionals	3	2.5	14	11.8	17	14.3	19	18.6	39	38.2	44	43.1	102	85.7	0.104
		PCMO	1	2.4	4	9.5	5	11.9	8	21.6	13	35.1	16	43.2	37	88.1	
		Non-PCMO	2	2.6	10	13.0	12	15.6	11	16.9	26	40.0	28	43.1	65	84.4	
1.10	Design a surveillance system.	Professionals	3	2.5	17	14.3	20	16.8	13	13.1	45	45.5	41	41.4	99	83.2	0.497
		PCMO	1	2.4	5	11.9	6	14.3	4	11.1	17	47.2	15	41.7	36	85.7	
		Non-PCMO	2	2.6	12	15.6	14	18.2	9	14.3	28	44.4	26	41.3	63	81.8	
1.11	Operate a surveillance system.	Professionals	5	4.2	2	1.7	7	5.9	30	26.8	50	44.6	32	28.6	112	94.1	0.415
		PCMO	1	2.4	0	0	1	2.4	12	29.3	18	43.9	11	26.8	41	97.6	
		Non-PCMO	4	5.2	2	2.6	6	7.8	18	2.4	32	45.1	21	29.6	71	92.2	
1.12	Use computer applications.	Professionals	5	4.2	3	2.5	8	6.7	26	23.4	66	59.5	19	17.1	111	93.3	0.548
		PCMO	4	9.5	1	2.4	5	11.9	11	29.7	21	56.8	5	13.5	37	88.1	
		Non-PCMO	1	1.3	2	.6	3	3.9	15	20.3	45	60.8	14	18.9	74	96.1	
1.13	Apply ethical conduct in practice.	Professionals	3	2.5	3	2.5	6	5.0	19	16.8	55	48.7	39	34.5	113	95.0	0.042
		PCMO	1	2.4	1	2.4	2	4.8	5	12.5	17	42.5	18	45.0	40	95.2	
		Non-PCMO	2	2.6	2	2.6	4	5.2	14	19.2	38	52.1	21	28.8	73	94.8	
2.1	Define a problem.	Professionals	2	1.7	4	3.4	6	5.1	20	17.7	58	51.3	35	31.0	113	95.0	0.215
		PCMO	1	2.4	2	4.8	3	7.1	9	23.1	21	53.8	9	23.1	39	92.9	
		Non-PCMO	1	1.3	2	2.6	3	3.9	11	14.9	37	50.0	26	35.1	74	96.1	
2.2	Determine use and limitations of data.	Professionals	2	1.7	5	4.2	7	5.9	14	12.5	53	47.3	45	40.2	112	94.1	0.237
		PCMO	1	2.4	1	2.4	2	4.8	5	12.5	19	47.5	16	40.0	40	95.2	
		Non-PCMO	2	1.7	5	4.2	7	5.9	9	12.5	34	47.2	29	40.3	72	93.5	
2.3	Select and define variables.	Professionals	4	3.4	3	2.5	7	5.9	13	11.6	56	50.0	43	38.4	112	94.1	0.020
		PCMO	3	7.1	0	0	3	7.1	3	7.7	22	56.4	14	35.9	39	92.9	
		Non-PCMO	1	1.3	3	3.9	4	5.2	10	13.7	34	46.6	29	39.7	73	94.8	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
2.4	Use basic qualitative and quantitative designs and methods.	Professionals	2	1.7	8	6.7	10	8.4	11	10.1	50	45.9	48	44.0	109	91.6	0.012
		PCMO	1	2.4	2	4.8	3	7.1	3	7.7	21	53.8	15	38.5	39	92.9	
		Non-PCMO	1	1.3	6	7.8	7	9.1	8	11.4	29	41.4	33	47.1	70	90.9	
2.5	Partner with communities.	Professionals	2	1.7	0	0	2	1.7	49	41.9	45	38.5	23	19.7	117	98.3	0.156
		PCMO	1	2.4	0	0	1	2.4	24	58.5	12	29.3	5	12.2	41	97.6	
		Non-PCMO	1	1.3	0	0	1	1.3	25	32.9	33	43.4	18	23.7	76	98.7	
2.6	Use appropriate data collection process.	Professionals	3	2.5	3	2.5	6	5.0	22	19.5	60	53.1	31	27.4	113	95.0	0.779
		PCMO	2	4.8	1	2.4	3	7.1	8	20.5	23	59.0	8	20.5	39	92.9	
		Non-PCMO	1	1.3	2	2.6	3	3.9	14	18.9	37	50.0	23	31.1	74	96.1	
2.7	Make relevant inferences from data.	Professionals	2	1.7	2	1.7	4	3.4	15	13.0	59	51.3	41	35.7	115	96.6	0.215
		PCMO	1	2.4	0	0	1	2.4	4	9.8	23	56.1	14	34.1	41	97.6	
		Non-PCMO	1	1.3	2	2.6	3	3.9	11	14.9	36	48.6	27	36.5	74	96.1	
2.8	Identify relevant data.	Professionals	4	3.4	1	0.8	5	4.2	31	27.2	51	44.7	32	28.1	114	95.8	0.160
		PCMO	2	4.8	0	0	2	4.8	11	27.5	19	47.5	10	25.0	40	95.2	
		Non-PCMO	2	2.6	1	1.3	3	3.9	20	27.0	32	43.2	22	29.7	74	96.1	
2.9	Apply ethical principles.	Professionals	2	1.7	2	1.7	4	3.4	21	18.3	64	55.7	30	26.1	115	96.6	0.927
		PCMO	1	2.4	1	2.4	2	4.8	6	15.0	25	62.5	9	22.5	40	95.2	
		Non-PCMO	1	1.3	1	1.3	2	2.6	15	20.0	39	52.0	21	28.0	75	97.4	
2.10	Evaluate data.	Professionals	1	0.8	2	1.7	3	2.5	13	11.2	56	48.3	47	40.5	116	97.5	0.619
		PCMO	0	0	0	0	0	0	5	11.9	19	45.2	18	42.9	42	100	
		Non-PCMO	1	1.3	2	2.6	3	3.9	8	10.8	37	50.0	29	39.2	74	96.1	
2.11	Illuminate issues from data.	Professionals	2	1.7	15	12.6	17	14.3	8	7.8	44	43.1	50	49.0	102	85.7	0.007
		PCMO	0	0	5	11.9	5	11.9	3	8.1	14	37.8	20	54.1	37	88.1	
		Non-PCMO	2	2.6	10	13.0	12	15.6	5	7.7	30	46.2	30	46.2	65	84.4	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
2.12	Interpret information about risks to the community.	Professionals	2	1.7	5	4.2	7	5.9	14	12.5	54	48.2	44	39.3	112	94.1	0.151
		PCMO	0	0	1	2.4	1	2.4	6	14.6	22	53.7	13	31.7	41	97.6	
		Non-PCMO	2	2.6	4	5.2	6	7.8	8	11.3	32	45.1	31	45.7	71	92.2	
3.1	Interpret information relevant to an issue.	Professionals	1	0.8	7	5.9	8	6.7	8	7.2	53	47.7	50	45.0	111	93.3	0.086
		PCMO	0	0	0	0	0	0	5	11.9	20	47.6	17	40.5	42	100	
		Non-PCMO	1	1.3	7	9.1	8	10.4	3	4.3	33	47.8	33	47.8	69	89.6	
3.2	State policy options.	Professionals	1	0.8	12	10.1	13	10.9	3	2.8	41	38.7	62	58.5	106	89.1	0.369
		PCMO	0	0	5	11.9	5	11.9	2	5.4	15	40.5	20	54.1	37	88.1	
		Non-PCMO	1	1.3	7	9.1	8	10.4	1	1.4	26	37.7	42	60.9	69	89.6	
3.3	Articulate implications of policy options.	Professionals	1	0.8	15	12.6	16	13.4	2	1.9	33	32.0	68	66.0	103	86.6	0.141
		PCMO	0	0	7	16.7	7	1.7	1	2.9	11	31.4	23	65.4	35	83.3	
		Non-PCMO	1	1.3	8	10.4	9	11.7	1	1.5	22	32.4	45	66.2	68	88.3	
3.4	State the expected outcome of policy options.	Professionals	1	0.8	10	8.4	11	9.2	3	2.8	42	38.9	63	58.3	108	90.8	0.124
		PCMO	0	0	4	9.5	4	9.5	1	2.6	13	34.2	24	63.2	39	90.5	
		Non-PCMO	1	1.3	6	7.8	7	9.1	2	2.9	29	41.4	39	55.7	70	90.9	
3.5	Decide on the appropriate course of action.	Professionals	1	0.8	11	9.2	12	10.0	7	6.5	51	47.7	49	45.8	107	89.9	0.057
		PCMO	0	0	4	9.5	4	9.5	3	7.9	18	47.4	17	44.7	38	90.5	
		Non-PCMO	1	1.3	7	9.1	8	10.4	4	5.8	33	47.8	32	46.4	69	89.6	
3.6	Utilise techniques in decision analysis and planning.	Professionals	3	2.5	8	6.7	11	9.2	8	7.4	51	47.2	49	45.4	108	90.8	0.020
		PCMO	1	2.4	2	4.8	3	7.1	3	7.7	20	51.3	16	41.0	39	92.9	
		Non-PCMO	2	2.6	6	7.8	8	10.4	5	7.2	31	44.9	33	47.8	69	89.6	
3.7	Identify policies related to programs.	Professionals	1	0.8	15	12.6	16	13.4	4	3.9	48	46.6	51	49.5	103	86.6	0.082
		PCMO	0	0	5	11.9	5	11.9	2	5.4	15	40.5	20	54.1	37	88.1	
		Non-PCMO	1	1.3	10	13.0	11	14.3	2	3.0	33	50.0	31	47.0	66	85.7	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
4.1	Interact sensitively, effectively, and professionally.	Professionals	1	0.8	0	0	1	0.8	43	36.4	51	43.2	24	20.3	118	99.2	0.578
		PCMO	0	0	0	0	0	0	18	42.9	20	47.6	4	9.5	42	100	
		Non-PCMO	1	1.3	0	0	1	1.3	25	32.5	31	40.3	20	26.0	76	98.7	
4.2	Identify the role of cultural factors in the delivery of services.	Professionals	2	1.7	3	2.5	5	4.2	19	16.7	57	50.0	38	33.3	114	95.8	0.407
		PCMO	1	2.4	2	4.8	3	7.2	6	14.3	24	57.1	9	21.4	39	92.8	
		Non-PCMO	1	1.3	1	1.3	2	2.6	13	16.9	33	42.9	29	37.7	75	97.4	
4.3	Develop problem solving that fits cultural differences.	Professionals	2	1.7	4	3.4	6	5.1	26	23.0	52	46.0	35	31.0	113	95.0	0.442
		PCMO	1	2.4	2	4.8	3	7.2	7	16.7	23	54.8	9	21.4	39	92.8	
		Non-PCMO	1	1.3	2	2.6	3	3.9	19	24.7	29	37.7	26	33.8	74	96.1	
5.1	Prepare emergency plans.	Professionals	1	0.8	8	6.7	9	7.5	13	11.8	49	44.5	48	43.6	110	92.4	0.035
		PCMO	1	2.4	3	7.1	4	9.5	4	9.5	18	42.9	16	38.1	38	90.5	
		Non-PCMO	0	0	5	6.5	5	6.5	9	11.7	31	40.3	32	41.6	72	93.5	
5.2	Develop plans.	Professionals	3	2.5	9	7.6	12	10.1	9	8.4	47	43.9	51	47.7	107	89.9	0.001
		PCMO	1	2.4	3	7.1	4	9.5	3	7.9	17	44.7	18	47.4	38	90.5	
		Non-PCMO	2	2.6	6	7.8	8	10.4	6	8.7	30	43.5	33	47.8	69	89.6	
5.3	Translate policy into organisational plans.	Professionals	1	0.8	10	8.4	11	9.2	10	9.3	40	37.0	58	53.7	108	90.8	0.001
		PCMO	1	2.4	4	9.5	5	11.9	6	16.2	11	29.7	20	54.1	37	88.1	
		Non-PCMO	0	0	6	7.8	6	7.8	4	5.6	29	40.8	38	53.5	71	92.2	
5.4	Monitor and evaluate programs.	Professionals	3	2.5	10	8.4	13	10.9	7	6.6	42	39.6	57	53.8	106	89.1	0.000
		PCMO	1	2.4	3	7.1	4	9.5	2	5.3	17	44.7	19	50.0	38	90.5	
		Non-PCMO	2	2.6	7	9.1	9	11.7	5	7.4	25	36.8	38	55.9	68	88.3	
5.5	Conduct cost-effectiveness-benefit-utility analyses.	Professionals	1	0.8	11	9.2	12	10.0	7	6.5	37	34.6	63	58.9	107	89.9	0.006
		PCMO	1	2.4	6	14.3	7	16.7	2	5.7	12	34.3	21	60.0	35	83.3	
		Non-PCMO	0	0	5	6.5	5	6.5	5	6.9	25	34.7	42	58.3	72	93.5	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
5.6	Apply theory of organisation.	Professionals	2	1.7	9	7.6	11	9.3	6	5.6	41	38.0	61	56.5	108	90.8	0.003
		PCMO	1	2.4	4	9.5	5	11.9	2	4.8	11	26.2	24	52.1	37	88.1	
		Non-PCMO	1	1.3	5	6.5	6	7.8	4	5.6	30	42.3	37	52.1	71	92.2	
5.7	Contribute to organisational performance standards.	Professionals	1	0.8	11	9.2	12	10.0	5	4.7	45	42.1	57	53.3	107	89.9	0.046
		PCMO	1	2.4	4	9.5	5	11.9	2	5.4	19	51.4	16	43.2	37	88.1	
		Non-PCMO	0	0	7	9.1	7	9.1	3	4.3	26	37.1	41	58.6	70	90.9	
5.8	Promote team learning and organisation learning.	Professionals	1	0.8	5	4.2	6	5.0	10	8.8	53	46.9	50	44.2	113	95.0	0.034
		PCMO	1	2.4	2	4.8	3	7.1	5	12.8	19	48.7	15	38.5	39	92.9	
		Non-PCMO	0	0	3	3.9	3	3.9	5	6.8	34	45.9	35	47.3	74	96.1	
5.9	Create key values and shared vision.	Professionals	1	0.8	5	4.2	6	5.0	10	8.8	52	46.0	51	45.1	113	95.0	0.075
		PCMO	1	2.4	2	4.8	3	7.1	5	12.8	19	48.7	15	38.5	39	92.9	
		Non-PCMO	0	0	3	3.9	3	3.9	5	6.8	34	45.9	35	47.3	74	96.1	
5.10	Identify issues through strategic planning.	Professionals	1	0.8	9	7.6	10	8.4	6	5.5	47	43.1	56	51.4	109	91.6	0.024
		PCMO	1	2.4	2	4.8	3	7.1	2	5.1	16	41.0	21	53.8	39	92.9	
		Non-PCMO	0	0	7	9.1	7	9.1	4	5.7	31	44.3	35	50.0	70	90.9	
5.11	Use appropriate methods that effect change.	Professionals	1	0.8	8	6.7	9	7.5	5	4.5	50	45.5	55	50.0	110	92.4	0.002
		PCMO	1	2.4	3	7.1	4	9.5	9	25.3	17	44.7	19	50.0	38	90.5	
		Non-PCMO	0	0	5	6.5	5	6.5	3	4.2	33	45.8	36	50.0	72	93.5	
5.12	Ensure participation of key stakeholders.	Professionals	3	2.5	3	2.5	6	5.0	17	15.0	62	54.9	34	30.1	113	95.0	0.533
		PCMO	2	4.8	0	0	2	4.8	9	22.5	22	55.0	9	22.5	40	95.2	
		Non-PCMO	1	1.3	3	3.9	4	5.2	8	11.0	40	54.8	25	34.2	73	94.8	
5.13	Create a culture of ethical standards.	Professionals	3	2.5	4	3.4	7	5.9	10	8.9	57	50.9	45	40.2	112	94.1	0.113
		PCMO	2	4.8	2	4.8	4	9.5	4	10.5	17	44.7	17	44.7	38	90.5	
		Non-PCMO	1	1.3	2	2.6	3	3.9	6	8.1	40	54.1	28	37.8	74	96.1	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
6.1	Communicate effectively.	Professionals	3	2.5	0	0	3	2.5	37	31.9	65	56.0	14	12.1	116	97.5	0.897
		PCMO	2	4.8	0	0	2	4.8	15	37.5	20	50.0	5	12.5	40	95.2	
		Non-PCMO	1	1.3	0	0	1	1.3	22	28.9	45	59.2	9	11.8	76	98.7	
6.2	Solicit input from individuals and organisations.	Professionals	5	4.2	0	0	5	4.2	25	21.9	66	57.9	23	20.2	114	95.8	0.394
		PCMO	2	4.8	0	0	2	4.8	10	25.0	22	55.0	8	20.0	40	95.2	
		Non-PCMO	3	3.9	0	0	3	3.9	15	20.3	44	59.5	15	20.3	74	96.1	
6.3	Advocate for public health.	Professionals	3	2.5	10	8.4	13	10.9	6	5.7	61	57.5	39	36.8	106	89.1	0.487
		PCMO	2	4.8	3	7.1	5	11.9	2	5.4	24	64.9	11	29.7	37	88.1	
		Non-PCMO	1	1.3	7	9.1	8	10.4	4	5.8	37	53.6	28	4.6	69	89.6	
6.4	Lead and participate in-groups.	Professionals	5	4.2	4	3.4	9	7.6	15	13.6	69	62.7	26	23.6	110	92.4	0.555
		PCMO	2	4.8	2	4.8	4	9.5	5	13.2	24	63.2	9	23.7	38	90.5	
		Non-PCMO	3	3.9	2	2.6	5	6.5	10	13.9	45	6.5	17	23.6	72	93.5	
6.5	Use appropriate channels to communicate information.	Professionals	5	4.2	0	0	5	4.2	26	22.8	62	54.4	26	22.8	114	95.8	0.519
		PCMO	2	4.8	0	0	2	4.8	11	27.5	18	45.0	11	27.5	40	95.2	
		Non-PCMO	3	3.9	0	0	3	3.9	15	20.3	44	59.5	15	20.3	74	96.1	
6.6	Listen to others in an unbiased manner.	Professionals	3	2.5	1	0.8	4	3.3	26	22.6	65	56.5	24	20.9	115	96.6	0.548
		PCMO	2	4.8	1	2.4	3	7.1	11	28.2	19	48.7	9	23.1	39	92.9	
		Non-PCMO	1	1.3	0	0	1	1.3	15	19.7	46	60.5	15	19.7	76	98.7	
6.7	Make accurate and effective presentations.	Professionals	3	2.5	0	0	3	2.5	24	20.7	67	57.8	25	21.6	116	97.5	0.469
		PCMO	2	4.8	0	0	2	4.8	10	25.0	23	57.5	7	17.5	0	95.2	
		Non-PCMO	1	1.3	0	0	1	1.3	14	18.4	44	57.9	18	23.7	76	98.7	
7.1	Maintain linkages with key stakeholders.	Professionals	4	3.4	0	0	4	3.4	44	38.3	58	50.4	13	11.3	115	96.6	0.280
		PCMO	3	7.1	0	0	3	7.1	18	46.2	19	48.7	2	5.1	39	92.9	
		Non-PCMO	1	1.3	0	0	1	1.3	26	34.2	39	51.3	11	14.5	76	98.7	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
7.2	Collaborate with community partners.	Professionals	3	2.5	0	0	3	2.5	58	50.0	45	38.8	13	11.2	116	97.5	0.626
		PCMO	2	4.8	0	0	2	4.8	25	62.5	12	30.0	3	7.5	40	95.2	
		Non-PCMO	1	1.3	0	0	1	1	1.3	33	43.4	33	43.4	10	13.2	76	
7.3	Mobilise organisations within the community.	Professionals	3	2.5	4	3.4	7	5.9	36	32.1	55	49.1	21	18.8	112	94.1	0.464
		PCMO	2	4.8	0	0	2	4.8	16	40.0	19	47.5	5	12.5	40	95.2	
		Non-PCMO	1	1.3	4	5.2	5	6.5	20	27.8	36	50.0	16	22.2	72	93.5	
7.4	Use management skills to build partnerships.	Professionals	1	0.8	3	2.5	4	3.4	19	16.5	55	47.8	41	35.7	115	96.6	0.155
		PCMO	1	2.4	1	2.4	2	4.8	7	17.5	19	47.5	14	35.0	40	95.2	
		Non-PCMO	0	0	2	2.6	2	2.6	12	16.0	36	48.0	27	36.0	75	97.4	
7.5	Identify community resources.	Professionals	1	0.8	3	2.5	4	3.3	30	26.1	52	45.2	33	28.7	115	96.6	0.493
		PCMO	1	2.4	1	2.4	2	4.8	13	32.5	17	42.5	10	25.0	40	95.2	
		Non-PCMO	0	0	2	2.6	2	2.6	17	22.7	35	46.7	23	30.7	75	97.4	
7.6	Conduct a community assessment.	Professionals	1	0.8	4	3.4	5	4.2	31	27.2	52	45.6	31	27.2	114	95.8	0.216
		PCMO	2	4.8	1	2.4	1	2.4	12	30.0	22	55.0	6	15.0	40	95.2	
		Non-PCMO	1	1.3	0	0	3	3.9	19	25.7	30	40.5	25	33.8	74	96.1	
8.1	Develop and present a budget.	Professionals	2	1.7	8	6.7	10	8.4	14	12.8	52	47.7	43	39.4	109	91.6	0.018
		PCMO	1	2.4	1	2.4	2	4.8	5	12.5	20	50.0	15	37.5	40	95.2	
		Non-PCMO	1	1.3	7	9.1	8	10.4	9	13.0	32	46.4	28	40.6	69	89.6	
8.2	Manage programs without budget constraints.	Professionals	2	1.7	6	5.0	8	6.7	14	12.6	46	41.4	51	45.9	111	93.3	0.010
		PCMO	1	2.4	1	2.4	2	4.8	4	10.0	17	42.5	19	47.5	0	95.2	
		Non-PCMO	1	1.3	5	6.5	6	7.8	10	14.1	29	40.8	32	45.1	71	92.2	
8.3	Apply budget processes.	Professionals	2	1.7	7	5.9	9	7.6	13	11.8	55	50.0	42	38.2	110	92.4	0.151
		PCMO	1	2.4	2	4.8	3	7.1	5	12.8	24	61.5	10	25.6	39	92.9	
		Non-PCMO	1	1.3	5	6.5	6	7.8	8	11.3	31	43.7	32	45.1	71	92.2	

Table-V.3: Frequencies, Proportions and Chi-square on Public Health Skills by Domain as Considered by Sub-groups of Public Health Professionals for Front-line Staff (Cont.)

No.	Skill	Group	Not Core Competency						Core Competency								X ² p value
			Missing		Not Core		Total		Proficiency		Knowledgeable		Awareness		Total		
			N	%	N	%	N	%	N	%	N	%	N	%	N	%	
8.4	Determine budget priorities.	Professionals	2	1.7	7	5.9	9	7.6	15	13.6	48	43.6	47	42.7	110	92.4	0.008
		PCMO	1	2.4	1	2.4	2	4.8	6	15.0	20	50.0	14	35.0	40	95.2	
		Non-PCMO	1	1.3	6	7.8	7	9.1	9	12.9	28	40.0	33	47.1	70	90.9	
8.5	Monitor program performance.	Professionals	4	3.4	9	7.6	13	11.0	13	12.3	49	46.2	44	41.5	106	89.1	0.366
		PCMO	2	4.8	2	4.8	4	9.5	7	18.4	17	44.7	14	36.8	38	90.5	
		Non-PCMO	2	2.6	7	9.1	9	11.7	6	8.8	2	47.1	30	44.1	68	88.3	
8.6	Develop proposals for funding.	Professionals	4	3.4	7	5.9	11	9.3	16	14.8	50	46.3	42	38.9	108	90.8	0.283
		PCMO	1	2.4	3	7.1	4	9.5	8	21.1	19	50.0	11	28.9	38	90.5	
		Non-PCMO	3	3.9	4	5.2	7	9.1	8	11.4	31	44.3	31	44.3	70	90.9	
8.7	Apply basic human relation skills.	Professionals	2	1.7	0	0	2	1.7	18	15.4	49	41.9	50	42.7	117	98.3	0.001
		PCMO	1	2.4	0	0	1	2.4	5	12.2	18	43.9	18	43.9	41	97.6	
		Non-PCMO	1	1.3	0	0	1	1.3	13	17.1	31	0.8	32	42.1	76	98.7	
8.8	Manage information systems for decision making.	Professionals	2	1.7	0	0	2	1.7	16	13.7	59	50.4	42	35.9	117	98.3	0.007
		PCMO	1	2.4	0	0	1	2.4	6	14.6	23	56.1	12	29.3	41	97.6	
		Non-PCMO	1	1.3	0	0	1	1.3	10	13.2	36	47.4	30	39.5	76	98.7	
8.9	Apply ethical conduct.	Professionals	2	1.7	1	0.8	3	2.5	23	19.8	51	44.0	42	36.2	116	97.5	0.056
		PCMO	1	2.4	1	2.4	1	2.4	9	22.5	19	47.5	12	30.0	40	95.2	
		Non-PCMO	1	1.3	0	0	3	3.9	14	18.4	32	42.1	30	39.5	76	98.7	

Table-V.4: Summary of the Analysis on Public Health Services within Public Health Professionals' and Administrators' Sub-groups

Public Health Services	Statistical Tests at p < 0.01			
	t-test / ANOVA (Summations)	p value	chi-square (Single items)	p value
Professionals: PCMO vs. Hospital Directors				
Current Performance on Public Health Services	Σ Services	No Significance	Planning and Management	0.004
			Assure access to services	0.002
Involvement in Public Health Services	Σ Front-line	No Significance	Per Service	No Significance
	Σ Mid-level	No Significance	Per Service	No Significance
	Σ Top-level	No Significance	Per Service	No Significance
Administrators: PAO vs. Municipality vs. TAO				
Current Performance on Public Health Services	Σ Services	No Significance	Per Service	No Significance
Involvement in Public Health Services	Σ Front-line	No Significance	Evaluation	0.006
	Σ Mid-level	No Significance	Per Service	No Significance
	Σ Top-level	No Significance	Per Service	No Significance
Administrators: PAO vs. Municipality				
Current Performance on Public Health Services	Σ Services	No Significance	Per Service	No Significance
Involvement in Public Health Services	Σ Front-line	No Significance	Evaluation	0.001
	Σ Mid-level	No Significance	Per Service	No Significance
	Σ Top-level	No Significance	Per Service	No Significance

Table-V.5: Summary of the Analysis on Public Health Competencies within Public Health Professionals' Sub-groups

Public Health Competencies	PCMO vs. Hospital Directors Statistical Tests at $p < 0.01$			
	t-test / ANOVA (Summations)	p value	chi-square (Single items)	p value
Front-line Staff				
Basic Public Health Skills	\sum Skills	No Significance	Per skill	No Significance
Analytical Skills	\sum Skills	No Significance	Per skill	No Significance
Policy Development Skills	\sum Skills	No Significance	Per skill	No Significance
Social Skills	\sum Skills	No Significance	Per skill	No Significance
Strategic Management Skills	\sum Skills	No Significance	Per skill	No Significance
Communication Skills	\sum Skills	No Significance	Per skill	No Significance
Partnership Skills	\sum Skills	No Significance	Per skill	No Significance
Operational Management Skills	\sum Skills	No Significance	Per skill	No Significance
Mid-level Management Staff				
Basic Public Health Skills	\sum Skills	No Significance	Per skill	No Significance
Analytical Skills	\sum Skills	No Significance	Per skill	No Significance
Policy Development Skills	\sum Skills	No Significance	Per skill	No Significance
Social Skills	\sum Skills	No Significance	Per skill	No Significance
Strategic Management Skills	\sum Skills	No Significance	Per skill	No Significance
Communication Skills	\sum Skills	No Significance	Per skill	No Significance
Partnership Skills	\sum Skills	No Significance	Per skill	No Significance
Operational Management Skills	\sum Skills	No Significance	Per skill	No Significance
Top-level Management Staff				
Basic Public Health Skills	\sum Skills	No Significance	1.13	0.006
Analytical Skills	\sum Skills	No Significance	Per skill	No Significance
Policy Development Skills	\sum Skills	No Significance	Per skill	No Significance
Social Skills	\sum Skills	No Significance	Per skill	No Significance
Strategic Management Skills	\sum Skills	No Significance	Per skill	No Significance
Communication Skills	\sum Skills	No Significance	Per skill	No Significance
Partnership Skills	\sum Skills	No Significance	Per skill	No Significance
Operational Management Skills	\sum Skills	No Significance	Per skill	No Significance

Table-V.6: Summary-1 of the Analysis on Public Health Competencies within Administrators' Sub-groups

Public Health Competencies	PAO vs. Municipality vs. TAO Statistical Tests at p < 0.01			
	t-test / ANOVA (Summations)	p value	chi-square (Single items)	p value
Front-line Staff				
Basic Public Health Skills	∑ Skills	No Significance	Per skill	No Significance
Analytical Skills	∑ Skills	No Significance	Per skill	No Significance
Policy Development Skills	∑ Skills	No Significance	Per skill	No Significance
Social Skills	∑ Skills	No Significance	Per skill	No Significance
Strategic Management Skills	∑ Skills	No Significance	Per skill	No Significance
Communication Skills	∑ Skills	No Significance	Per skill	No Significance
Partnership Skills	∑ Skills	No Significance	Per skill	No Significance
Operational Management Skills	∑ Skills	No Significance	Per skill	No Significance
Mid-level Management Staff				
Basic Public Health Skills	∑ Skills	No Significance	1.3	0.009
Analytical Skills	∑ Skills	No Significance	Per skill	No Significance
Policy Development Skills	∑ Skills	No Significance	Per skill	No Significance
Social Skills	∑ Skills	No Significance	Per skill	No Significance
Strategic Management Skills	∑ Skills	No Significance	Per skill	No Significance
Communication Skills	∑ Skills	No Significance	Per skill	No Significance
Partnership Skills	∑ Skills	No Significance	Per skill	No Significance
Operational Management Skills	∑ Skills	No Significance	Per skill	No Significance
Top-level Management Staff				
Basic Public Health Skills	∑ Skills	Municipality <PAO & TAO 0.000	1.3 1.4 1.5 1.9 1.11	0.003 0.001 0.007 0.008 0.004
Analytical Skills	∑ Skills	Municipality <PAO 0.005	2.4	0.01
Policy Development Skills	∑ Skills	No Significance	Per skill	No Significance
Social Skills	∑ Skills	No Significance	Per skill	No Significance
Strategic Management Skills	∑ Skills	No Significance	Per skill	No Significance
Communication Skills	∑ Skills	No Significance	Per skill	No Significance
Partnership Skills	∑ Skills	No Significance	Per skill	No Significance
Operational Management Skills	∑ Skills	No Significance	Per skill	No Significance

Table-V.7: Summary-2 of the Analysis on Public Health Competencies within Administrators' Sub-groups

Public Health Competencies	PAO vs. Municipality Statistical Tests at p < 0.01			
	t-test / ANOVA (Summations)	P value	chi-square (Single Items)	p value
Front-line Staff				
Basic Public Health Skills	∑ Skills	No Significance	Per skill	No Significance
Analytical Skills	∑ Skills	No Significance	Per skill	No Significance
Policy Development Skills	∑ Skills	No Significance	Per skill	No Significance
Social Skills	∑ Skills	No Significance	Per skill	No Significance
Strategic Management Skills	∑ Skills	No Significance	Per skill	No Significance
Communication Skills	∑ Skills	No Significance	Per skill	No Significance
Partnership Skills	∑ Skills	No Significance	Per skill	No Significance
Operational Management Skills	∑ Skills	No Significance	Per skill	No Significance
Mid-level Management Staff				
Basic Public Health Skills	∑ Skills	Municipality < PAO 0.009	1.3 1.9	0.003 0.007
Analytical Skills	∑ Skills	No Significance	Per skill	No Significance
Policy Development Skills	∑ Skills	No Significance	Per skill	No Significance
Social Skills	∑ Skills	No Significance	Per skill	No Significance
Strategic Management Skills	∑ Skills	No Significance	Per skill	No Significance
Communication Skills	∑ Skills	No Significance	Per skill	No Significance
Partnership Skills	∑ Skills	No Significance	Per skill	No Significance
Operational Management Skills	∑ Skills	No Significance	Per skill	No Significance
Top-level Management Staff				
Basic Public Health Skills	∑ Skills	Municipality < PAO 0.000	1.1 1.3 1.4 1.5 1.6 1.7 1.8 1.9 1.11 1.12	0.01 0.001 0.001 0.001 0.006 0.003 0.006 0.003 0.001 0.009
Analytical Skills	∑ Skills	Municipality < PAO 0.001	2.4 2.7 2.10 2.11	0.004 0.007 0.004 0.007
Policy Development Skills	∑ Skills	No Significance	Per skill	No Significance
Social Skills	∑ Skills	No Significance	Per skill	No Significance
Strategic Management Skills	∑ Skills	No Significance	Per skill	No Significance
Communication Skills	∑ Skills	No Significance	Per skill	No Significance
Partnership Skills	∑ Skills	No Significance	Per skill	No Significance
Operational Management Skills	∑ Skills	No Significance	Per skill	No Significance

Curriculum Vitae

Name Marc G.B. Van der Putten

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Education

1996 MPH (Health Systems Development)
College of Public Health – Chulalongkorn University
Bangkok – Thailand

1976 PG Diploma Med.Sc. (Management)
NVKVV
Brussels – Belgium

1972 BSc (Psychiatric Nursing)
Professor Guislain Institute
Gent – Belgium

Professional Achievements

1999-to date Academic Staff
College of Public Health – Chulalongkorn University
Bangkok – Thailand

1998-99 Assistant Teacher
College of Public Health – Chulalongkorn University
Bangkok – Thailand



- 1996-98 Provincial Health Advisor
Integrated Primary Health Care Project: Cambodia
Health Unlimited – London – UK
- 1987-95 Project Director
Tuberculosis & Leprosy Control Project: Bangladesh
Damien Foundation – Brussels – Belgium
- 1984-87 Co-ordinator Psycho-Geriatric Care
Hospice Mariahoeve: The Netherlands
KVV Stichting – Den Hague – Netherlands
- 1978-84 Co-ordinator Psycho-Social Revalidation
Ambulatory PsychoSocial Revalidation Project: Belgium
't Brugske vzw, Leopoldsburg – Belgium
- 1975-78 Deputy Head Nurse
Psychiatric Hospital Re-socialisation Unit: Belgium
St. Amadeus Institute – Antwerp – Belgium
- 1972-75 Psychiatric Nurse
Psychiatric Hospital Admission Unit: Belgium
Professor Guislain Institute – Gent – Belgium

Academic Achievements

Teaching:

- 1999-to date International MPH and Learning @ Workplace Program
Lecturer and advisor to students on thesis development
College of Public Health Chulalongkorn University
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1999-2002 International MPH Program
 Program Co-ordinator
 College of Public Health Chulalongkorn University
 Bangkok – Thailand

1998-to date Act-Malaria
 Lecturer for the regional training program
 Bangkok – Thailand
 Penang - Malaysia

1998-1999 MPH Program: Learning @ Workplace
 Curriculum and learning material development
 College of Public Health Chulalongkorn University
 Bangkok- Thailand

Research:

2000-2002: Enhancing the Relevance of Public Health Education: Strengthening Public
 Health Education in Rural Thailand.
 Project co-ordinator
 China Medical Board NY- USA

2000- 2002: A Design Study on Learning at the Workplace as an Innovative Strategy for
 Human Resource Development.
 Principle Investigator
 World Health Organisation Country Office Thailand.

Publications

Van der Putten, M., King, S., Love, E. Addressing the relevance in postgraduate public health education. IMJ Vol.8 No.4 December 2001 259:262

Sittisingh, U., Van der Putten, M. An action research to control and prevent iron deficiency anaemia in women of reproductive age at a factory in Chachengsao Province Thailand. Conference Proceedings Department of Health July 2002. Ministry of Public Health, Thailand.

Inkochasan M., Trayaporn T., Van der Putten M.G.B. Professional perspectives in assessing need for public health education in rural Thailand. J. Adult Education and Development (Accepted 24.09.2002)

Van der Putten M.G.B, Love E.J, Rachataramya B., Vichit-Vadakan N. The Learning @ the Workplace Program: a postgraduate education program in public health, College of Public Health, Chulalongkorn University, Thailand. APJPH (Under Editorial Review 2002)

Trayaporn T., Inkochasan M., Van der Putten M.G.B. A learner-centred assessment of the Learning @ the Workplace Program: an innovative postgraduate public health program in Thailand. Chulalongkorn Educational Review (Accepted 29 Nov. 2002)

Van der Putten M.G.B., Love E.J., Chuchat A., Janjaroen S.W. Assessing the current performance of public health services in Thailand. APJPH (Under Editorial Review 2002)

Service Activities

- 1978-84 Board member & counsellor
 Voluntary Agency
 KWH vzw – Turnhout - Belgium
- 1974-76 Counsellor
 Voluntary Agency: counselling in mental health
 Saloom vzw – Antwerp – Belgium
- 1974-76 Board member
 Voluntary Agency
 Saloom vzw – Gent – Belgium