Public Health of Indonesia
Tosepu, R. Public Health of Indonesia. 2018 December;4(4):170-172
http://stikbar.org/ycabpublisher/index.php/PHI/index
ISSN: 2477-1570

Perspective

ONTOLOGY AND EPISTEMOLOGY OF MALARIA

Ramadhan Tosepu*

Faculty of Public Health, University of Halu Oleo Kendari, Indonesia

Accepted: 22 December 2018
***Correspondence:**
Ramadhan Tosepu
Faculty of Public Health, University of Halu Oleo
Jl.H.E.Mokodompit, Anduonohu, Kendari. Southeast Sulawesi, Indonesia
Email: adhan_lpmi@yahoo.co.id

Keywords: public health, Malaria, philosophy, ontology, epistemology

In the philosophy of science, a scientific discipline can be expressed as knowledge, if it fulfills the ontology criteria that include what the nature of science, epistemology includes methods and paradigms and axiology includes goals, imperative values, attitudes (Suriasumantri, 1988). Plato says philosophy is the knowledge that is to achieve genuine truth (Bostock, 1986). Whereas Aristotle defines philosophy is science which includes the fact contained in it the sciences of metaphysics, logic, rhetoric, ethics, economics, politics, and aesthetics (Charles, 1984).

Ontology in public health can function as a formalized repository of knowledge to improve public health surveillance systems (Tolentino et al., 2005). Ontology is defined as the study of the concepts of reality explained by a scientific discipline (Dharmawan, 2007). Ontology of malaria is a field that moves to understand, explore and develop knowledge about the disease. Epistemology or history of scientific development in examining the origin and scope of a realm of knowledge that seeks to answer questions 'how is science acquired? (Bodenreider, Smith, & Burgun, 2004).

Malaria is an infectious disease caused by the Plasmodium parasite which is transmitted by the bite of a female Anopheles mosquito (Cox, 2010; Organization, 1995). Known for five species, namely *Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale, Plasmodium malariae* and *Plasmodium knowlesi* (Spangenberg et al., 2013). Malaı 170 morbidity in an area is determined by Annual Parasite Incidence (API) per year. API is the number of malaria positive cases per 1,000 residents in one year. Indonesia has a malaria prevalence of 1.4% with an API figure in 2015 of 0.85%, and Bengkulu Province is ranked sixth which has a prevalence rate of 1.5% and an API rate of 2.03% (Kementrian Kesehatan, 2016). Transmission of malaria is highly related to climate (Arab, Jackson, & Kongoli, 2014; Paaijmans et al., 2010). Seasonal changes affect both directly and indirectly against vector carrying disease (Grover-Kopec et al., 2006). Environmental conditions have a direct impact on vector reproduction, development, the relative age of the population and the development of parasites in the vector body, as well as vegetation changes and agricultural cropping patterns also affect vector population density (Razakandrainibe et al., 2009).

Given the explanation of philosophy of science and malaria, what it remains unclear is how about the philosophy of public health and how it is implemented and applied to malaria. This article is aimed to provide the perspective in regards to the ontology and epistemology of Malaria.

ONTOLOGY AND EPISTEMOLOGY OF MALARIA

According to Nijhuis and Van der Maesen, philosophy of public health is explained separately, namely "Public" and "Health". These two terms have their own categories. "Public" category number 1 emphasizes the individual. In this view, the public is primarily comprised of the actions and motives of discrete individuals. "Public" category number 2, on the other hand, emphasizes the collective over the individual. In this view, the public is primarily conceived as populations within social, economic, and political systems. "Health" category number 3 is a mechanistic view that emphasizes the traditional medical distinction between disease and non-disease in the individual, while "Health" category number 4 views health as the degree to which an individual reaches an equilibrium state with physical, psychological, and social influences. Much more could be said about these four categories (Islam, 2017; Weed, 1999). Malaria is a public health problem in the tropics (Uneke, 2008).

Based on the Nijhuis and Van der Maesen's explanation, therefore, "Public" and "Health" of malaria can be described as the following:

"Public" category of the number 1, Individual actions, in this case, are actions carried out by individuals to overcome something, in this case, namely how he acts related to malaria and the reasons for individuals doing it as a motive. So if individuals have a view of ontology related to malaria, then ethically it will have a positive impact on individuals, namely avoiding malaria.

"Public" category of the number 2 and 4. In general, malaria-endemic locations are remote villages with bad environmental conditions, difficult means of transportation and communication, lack of access to health services, low levels of education and socio-economic conditions, and poor healthy living behavior (Chiyaka, Garira, & Dube, 2007; Maguire et al., 2005; Steketee, Nahlen, Parise, & Menendez, 2001). The use of insecticide-treated bed nets is one of the effective ways to prevent malaria (Korenromp et al., 2003). The community uses insecticide-treated bed nets to feel comfortable effects when using mosquito nets, and the community also gives a positive attitude towards the use of mosquito nets (Wael, Thaha, & Riskiyani).

"Health" category of the number 3. There is a belief in the community that malaria is a common problem that they can handle themselves using the knowledge they have acquired before (Zaluchu & Arma, 2008). In Jambi province, there were 34.5% of malaria treatment users, with the most widely used traditional medicines being using Sambiloto (27.1%) (Dharmawan, 2007). In modern terms, there are drugs used in the treatment of malaria. New mefloquine and halofantrine drugs will be widely available for clinical use of malaria (Hyde, 2005).

"Health" category of the number 4. The social influence in the community towards malaria still has an active role. Public trust in the causes of malaria, ways of treatment and ways to prevent malaria are still powerful in holding customs regarding healing and perceiving an illness (Ningsi, Anastasia, & Nurjana, 2010).

CONCLUSIONS

Understanding science should be based on philosophy. Science has developed very quickly. Therefore philosophy as the foundation of science must be a reference in developing science. Malaria is one of the studies of public health and needs to be studied by its basic foundation by using philosophical studies.

REFERENCES

Arab, A., Jackson, M. C., & Kongoli, C. (2014). Modelling the effects of weather and climate on malaria distributions in West Africa. *Malaria journal, 13*(1), 126.

Bodenreider, O., Smith, B., & Burgun, A. (2004). *The ontology-epistemology divide: A case study in medical terminology.* Paper presented at the Formal ontology in information systems: proceedings of the... International Conference. FOIS (Conference).

Bostock, D. (1986). Plato's' Phaedo'.

Charles, D. (1984). Aristotle's philosophy of action.

Chiyaka, C., Garira, W., & Dube, S. (2007). Transmission model of endemic human malaria in a partially immune population. *Mathematical and computer modelling, 46*(5-6), 806-822.

Cox, F. E. (2010). History of the discovery of the malaria parasites and their vectors. *Parasites & vectors, 3*(1), 5.

Dharmawan, A. H. (2007). Dinamika sosio-ekologi pedesaan: Perspektif dan pertautan keilmuan ekologi manusia, sosiologi lingkungan dan ekologi politik. *Sodality: Jurnal Sosiologi Pedesaan, 1*(1).

Grover-Kopec, E. K., Blumenthal, M. B., Ceccato, P., Dinku, T., Omumbo, J. A., & Connor, S. J. (2006). Web-based climate information resources for malaria control in Africa. *Malaria journal, 5*(1), 38.

Hyde, J. E. (2005). Drug-resistant malaria. *Trends in parasitology, 21*(11), 494-498.

Islam, Z. (2017). Ontology of Public Health in University Curriculum: Exploring Basic Elements of an Interdisciplinary Field of Knowledge. *Journal of Educational Issues, 3*(1), 170-188.

Kementrian Kesehatan, R. (2016). InfoDatin Malaria. *Jakarta: Kementrian Kesehatan RI*.

Korenromp, E. L., Miller, J., Cibulskis, R. E., Kabir Cham, M., Alnwick, D., & Dye, C. (2003). Monitoring mosquito net coverage for malaria control in Africa: possession vs. use by children under 5 years. *Tropical Medicine & International Health, 8*(8), 693-703.

Maguire, J. D., Tuti, S., Sismadi, P., Wiady, I., Basri, H., Masbar, S., . . . Bangs, M. J. (2005). Endemic coastal malaria in the Thousand Islands District, near Jakarta, Indonesia. *Tropical Medicine & International Health, 10*(5), 489-496.

Ningsi, N., Anastasia, H., & Nurjana, M. A. (2010). Aspek sosial budaya masyarakat berkaitan dengan kejadian malaria di Desa Sidoan Kabupaten Parigi Moutong Sulawesi Tengah. *Media Penelitian dan Pengembangan Kesehatan*.

Organization, W. H. (1995). Vector control for malaria and other mosquito-borne diseases: Report of a WHO study group.

Paaijmans, K. P., Blanford, S., Bell, A. S., Blanford, J. I., Read, A. F., & Thomas, M. B. (2010). Influence of climate on malaria transmission depends on daily temperature variation. *Proceedings of the National Academy of Sciences, 107*(34), 15135-15139.

Razakandrainibe, R., Thonier, V., Ratsimbasoa, A., Rakotomalala, E., Ravaoarisoa, E., Raherinjafy, R., . . . Carod, J. F. (2009). Epidemiological situation of malaria in Madagascar: baseline data for monitoring the impact of malaria control programmes using serological markers. *Acta tropica, 111*(2), 160-167.

Spangenberg, T., Burrows, J. N., Kowalczyk, P., McDonald, S., Wells, T. N., & Willis, P. (2013). The open access malaria box: a drug discovery catalyst for neglected diseases. *PloS one, 8*(6), e62906.

Steketee, R. W., Nahlen, B. L., Parise, M. E., & Menendez, C. (2001). The burden of malaria in pregnancy in malaria-endemic areas. *The American journal of tropical medicine and hygiene, 64*(1_suppl), 28-35.

Suriasumantri, J. S. (1988). Filsafat ilmu. *Jakarta: Sinar Harapan*.

Tolentino, H. D., Liu, F., Sagaram, D., Kamadjeu, R., Fontelo, P., Kohl, K., & Payne, D. (2005). *Creating a vaccine adverse event ontology for public health.* Paper presented at the AMIA Annual Symposium Proceedings.

Uneke, C. (2008). Concurrent malaria and typhoid fever in the tropics: the diagnostic challenges and public health implications. *J Vector Borne Dis, 452133*, 133-142.

Wael, M. Y., Thaha, R. M., & Riskiyani, S. Upaya pencegahan malaria oleh masyarakat di wilayah kerja puskesmas kayeli, kecamatan wayapo, kabupaten buru. Maluku malaria disease prevention efforts by working in the community health center kayeli, wayapo district, district buru 2013.

Weed, D. L. (1999). Towards a philosophy of public health. *Journal of Epidemiology and Community Health, 53*(2), 99.

Zaluchu, F., & Arma, A. J. A. (2008). Studi Kualitatif Sosio-Psikologi Masyarakat Terhadap Penyakit Malaria Di Daerah Endemis Malaria (Studi Kasus di Kecamatan Gunung Sitoli, Kabupaten Nias). *Studi Kualitatif Sosio-Psikologi Masyarakat Terhadap Penyakit Malaria Di Daerah Endemis Malaria (Studi Kasus di Kecamatan Gunung Sitoli, Kabupaten Nias)*.

Cite this article as: Tosepu, R. (2018). Ontology and epistemology of malaria. *Public Health of Indonesia*, *4*(4): 170-172.