Communication on COVID-19 to community –

measures to prevent a second wave of epidemic

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Introduction

COVID-19 pandemic is rapidly spread over the planet,[1] and countries are tackling to limit its progression by different approaches.[2] A variety of community mitigation strategies are applied,[3] however, some recent medical discoveries are not widely communicated to the public, and knowledge and attitudes about the infection is not routinely measured in community – while it could be crucial to prevent a second wave of epidemic. The shortage of publicly shared knowledge stands problematic not only in the context of growing concerns about fake news,[4] but also in the context of distrust towards public institutions[5] promoting norms of individual behavior and coordinating community cooperation during the epidemic.

Community awareness on quarantine threshold

Current knowledge and blind-spots concerning COVID-19 epidemic play a crucial role both in choice of institutionally approved "top-down" medical policies and in grass-roots strategies adopted by communities. Notably, there is a knowledge gap between widely communicated data on time thresholds and recent scientific findings, that primary concerns incubation and viral shedding periods.

The maximal incubation period as 14 days was widely communicated to the public by WHO[6] and mass media, but modeling study estimated that 1 in 100 infected patients will develop symptoms after 14 days of active monitoring or quarantine,[7] and some scientific reports suggest it could be extended up to 24 days[8][9] (in one of these

manuscripts this maximal duration was indicated in the preprint[8] but changed to median and interquartile duration in the accepted article[10]).

The viral shedding (estimated by real-time reverse transcriptase–polymerase chain reaction (RT-PCR)) varies by severity of infection, and China data from hospitalized 137 survivors indicate the median duration as 20 days (interquartile range 17–24) and maximal duration as 37 days.[11] In another study of 46 patients with mild infection not requiring ICU treatment the duration was shorter, with 90% achieving viral clearance by 10 post-onset day, but some of them only at 15 day, while in 30 patients with severe infection viral shedding continued up to 25 days.[12] Thus, between studies estimate of maximal duration of viral shedding could vary more than 1.5-fold in severe cases, and probably this is also true for the mild infection.

As we know from the largest published experience of China,[13] 81% of patients have mild clinical signs and symptoms, and in case of hospital overwhelm could be treated at home. Almost 50% of patients had no fever (>37.5 C) at admission to the hospital, and 11-15% of mild cases had no fever during the whole hospitalization, over a third had no cough, and almost 80% had no dyspnea[10][12] – that potentially could lead to non-compliance with stay-at-home regimen. Indeed, modeling study estimated that 86% of all infected persons were undocumented prior to travel restrictions,[14] and Chinese researchers suggest that 59% of the infected individuals were not being tested, and probably continued to follow a routine lifestyle. A substantial proportion (18-30%) of infected individuals are completely asymptomatic,[15] even there is much uncertainty whether they could infect others. Moreover, shortage of diagnostic tests could lead to late COVID-19 diagnostic even in symptomatic medical personnel.[16] Considering risks associated with such epidemiological uncertainty and possibility of quick infection spread by both symptomatic and asymptomatic bearers, many national and local

governments set highly restrictive measures limiting personal social mobility of the whole population.[2]

No representative data are available on awareness about the aforementioned medical facts, but our communication with only 3 persons in Italy (2 had one-week febrile fever without hospitalization and with no test for COVID-19, and another is healthy general public individual) revealed that none of them were aware about possibility of incubation period or viral shedding longer than 14 days. In opposite to the longer viral shedding, the median duration of fever was 12 days among hospitalized patients,[11] and could be even shorter in less severe patients who stay at home without RT-PCR testing. For many individuals disappearance of fever could symbolize the end of acute phase, especially if cough is decreasing or absent. Communication of these facts could be especially important to the most socially active persons, who could have higher chances to be infected, and in case of incomplete recovery and return to high social activity (including possible violations of the social distancing measures) they could play a role of moving force for secondary wave of epidemic.

Aforementioned facts have strong consequences for the epidemic process, and highlight the need to communicate these data wider to the general population. Current stay-at-home policy is widely promoted, but even in the most affected Lombardy Region in Italy[17] up to 40% of population might continue to move outside their homes according to the mobile phones tracking,[18] although it remains unclear whether this number related just to movement to local grocery stores, sport activity, relocation to socially significant work, or also reflects undesirable inter-personal interactions or unnecessary long-distance journeys. Seeing as a sign of irresponsible attitude "from below", this percentage pushes to harden restrictive measures over population and amplify police controls. These phenomena occurs in the context of a substantial pre-

epidemic distrust of the population to government authority, with Italy and France showing the scepticism concerning public institutions (66-86%), national economy (66-83%) and European future (44-55%) among the highest in the EU in Eurobarometer survey.[19] Under such circumstances, public institutions could strengthen their confidence by consistent sharing of latest and detailed scientific knowledge about COVID-19, in addition to mainly paternalistic hardening of stay-at-home control.

Community engagement to fight with epidemic

Involvement of different community structures, starting from local authorities to small grocery stores (setting up home delivery) to volunteering assistance networks, is exceptional, with a major respect of the adopted security restrictions. The governmental communication with general public seems reasonably paternalistic based on unidirectional instructions on prevention measures, information about economic incentives, and core numbers of COVID-19 outbreak. However, little is known about the perception of these communications by general public, everyday practices of adhesion to these rules by different social groups, psychological patterns of copping with restrictive measurements in different countries and groups. In fact, by March 21 we found only two articles among the 2249 publications on COVID-19[20] in the WHO database and one article not yet indexed there regarding knowledge, attitudes and practices in community. In China, respondents had high adherence to isolation measures, even if 8.5% could not achieve "do not go to crowded and closed places" measure, but a low awareness rate of the atypical symptoms of COVID-19.[21] In Saudi Arabia, experience on MERS-CoV indicates almost a half of population were not aware about upper respiratory symptoms during infection, the need of preventive hand

washing and that disease is transmitted by infected people.[22] Survey of almost 6,000 respondents in United States and United Kingdom indicated generally good knowledge of the main mode of disease transmission and common symptoms, but 15-20% were not aware about respiratory symptoms of COVID-19 infection, 19-25% wrongly assumed not relevant symptoms, 19-25% did not know how persons could be infected, and 7-14% were not aware about preventive measures.[23]

A dozen of articles evaluated psychological response ([24][25][26][27][28][29][30] just to mention a few), with the most important finding in the context of current analysis that persons who perceive to having low risk of infection or complications are less likely to change their social behavior and prone to disregard recommendations for social distancing.[31] Analysis of MERS-CoV outbreak indicates that both affective and cognitive risk perceptions decreased over time,[32] which may also be relevant in group behavior during the current COVID-19 epidemic.

Considering the shortage of data on these issues, we advocate to perform both quantitative and qualitative sociological studies to monitor the community perception and adherence to preventive measures. Complimentary to this monitoring strategies include evaluation of search engine queries[33] and big data analysis of social media. Taiwan and South Korean governments have implemented community-oriented strategy of real-time information through text messaging about the virus propagation that zooms the contamination cases to the level of city districts and even of condominiums[34][35] resulted from massive preventive testing.[36] Experimental mobile phone-based web survey with artificial intelligence processing suggests early identification of the high-risk persons with clinical symptoms or history of contacts, with subsequent quarantine recommendation.[37] The later methods have yet a tangible potential of consent and privacy issues, and their use beside the range of prediction needs a closer examination.

Vulnerable social groups

The COVID-19 infection has higher complication rates in elderly population. Children, even if generally having mild clinical symptoms, find themselves in the increased risk of physical and mental impacts of quarantine,[38] and require specific approach for communication.[39] However, some age unrelated social groups are especially vulnerable during the epidemic. This concerns persons with low health literacy,[40] international migrant workers[41] with estimated global number as 150 million, international students,[42] persons in assisted living and nursing homes, persons with intellectual or sensorial disabilities,[43] refugees,[44][45] homeless people,[46] prisoners.[47] These groups are disempowered in face of the epidemic and urge for a special need to bilateral communication in order to sociologically monitor their perception of general preventive actions, and to eventually readjust these actions to particular social conditions.

Misleading communications

Essential knowledge about transmission and prevention are widely communicated to community by all stakeholders, however, some messages could be misleading. Some inaccuracy could occur even by speechwriters of the presidental address to the nation which emphasized children among major infection carriers group.[48] In contrast, certain miscommunications have maliciously provocative forms with circulation of equivocal instructions in social media, or racial discrimination in paper media.[29]

Psychological stress could lead to stigmatization of other people, discrimination, moralizing and searching for enemy to rationalize the exceptional threat posed by epidemic.[49][50] While the classic media have in general higher responsibility to not express these destructive manifestations, some users of social networks are less prone to follow ethical and humanistic standards that requires identifying and removing disease trolls and conspiracy advocates from major internet services.[51] At the same time, social media are vital shapers of the public's risk perception, especially useful for individuals without first-hand experience or knowledge of a health hazard.[52] Regarding this, the launch of WHO Health Alert service in WhatsApp is a crucial move to bring latest verified COVID-19 facts to billions of citizens.[53]

Conclusion

Initial governmental interaction with general public during was reasonably paternalistic, with provision of information about COVID-19 jeopardy and instructions for preventive measures. However, continuous gathering of feedback from general public and some vulnerable social groups is not routinely performed, that leaves uncertainty about the acceptance of preventive measures and social isolation behavior. We need to consider the epidemic from sociological point of view in addition to medical and economical perspectives as part of collective strategy that would further address trust and communication issues between authorities and population.

Stakeholders provide core information on the outbreak, but the latest scientific facts (for instance, the maximal duration of viral shedding) are not widely communicated to communities, although this could increase adhesion to actions deterring the epidemic.

Widely accepted quarantine threshold of 14 days may mislead expectations toward the shortness of COVID-19 epidemic, while the emphasis on extended quarantine up to 40 days even after mild respiratory infection (in the absence of confirmatory negative COVID-19 RT-PCR test) could better prepare public opinion to longer period of extraordinary measures. A reshaped communication patterns would be especially important taking into account the approaching Easter holidays and arriving of spring in Northern hemisphere, both of which are traditionally related to higher socially activity.

These measures would increase compliance to quarantine rules, and help to prevent the second wave of epidemic, that may occur if risk perception decreases over time and persons with viral shedding resume face-to-face social contacts.

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