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1 **Anti-pandemic lessons and altruistic behavior from major world religions**
2 **at the time of COVID-19**

3 **Jaouad Bouayed^{1,*}, Feng Q. Hefeng^{2,3}, Mahesh S. Desai^{2,4}, Bin Zhou⁵, Tsurriel Rashi⁶,**
4 **Rachid Soulimani¹, Torsten Bohn⁷**

5 ¹ Université de Lorraine, LCOMS / Neurotoxicologie Alimentaire et Bioactivité, 57000 Metz,
6 France

7 ² Department of Infection and Immunity, Luxembourg Institute of Health (LIH), 29, rue Henri
8 Koch, L-4354, Esch-sur-Alzette, Luxembourg

9 ³ Institute of Medical Microbiology, University Hospital Essen, University of Duisburg-
10 Essen, D-45122 Essen, Germany

11 ⁴ Odense Research Center for Anaphylaxis, Department of Dermatology and Allergy Center,
12 Odense University Hospital, University of Southern Denmark, 5000 Odense, Denmark

13 ⁵ Translational Research Center for Medical Innovation, 1-5-4 Minatojima-minamimachi,
14 chuo-ku Kobe, 650-0047 Japan.

15 ⁶ Ariel University, 65 Ramat Ha'Golan St., Ariel, Israel

16 ⁷ Nutrition and Health Research Group, Department of Population Health (DoPH),
17 Luxembourg Institute of Health (LIH), 1 A-B, rue Thomas Edison, L-1445 Strassen,
18 Luxembourg

19 * to whom correspondence should be addressed:

20 E-mail addresses:

21 jaouad.bouayed@univ-lorraine.fr (J. Bouayed)

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24 Buddhism, Hinduism.

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28 **Text**

29 The COVID-19 induced global crisis has highlighted the importance of self-isolation for
30 the sake of the health of larger communities, and religious background may be an important
31 factor. Altruistic behavior is a trait that has been existing within the puzzling repertoire of
32 human behavior. Religion-related altruistic behavior, including quarantine and isolation, has
33 been successfully employed as an adapted defense strategy against pandemics, constituting a
34 common and shared legacy that mankind has had to adopt to fight their spread. It is motivated
35 by a perceived reward from God, such as entry to paradise, and can thus be regarded as a
36 reward behavior. It could be argued that fear of punishment - receiving a fine or social outing
37 - are likewise drivers to follow protective orders. However, such measures are often not in
38 place (not during early phases of a pandemic), leaving unselfish behavior including patience
39 as the main protective defense strategy. Altruistic behavior may be more effective than
40 enforced behavior, as it can interact with the brain's dopamine reward system, involving
41 pleasure and satisfaction (Figure 1).

42 The concepts of quarantine and isolation are embedded in religion around the world. In the
43 Judaism, the Babylonian Talmud rules that “if there is plague in the town, go home” (1). 200
44 years ago, Rabbi Akiva Eger received a letter of appreciation from the King of Prussia,
45 Friedrich Wilhelm III as he did institute regulations including directives to isolate areas of
46 infection that greatly helped preventing cholera spread in Poland (1).

47 In Leviticus in the bible (13:46) it is stated: “As long as they have the disease they remain
48 unclean. They must live alone, they must live outside the camp”. In 1666, in line with this
49 statement, such altruist and cautious behavior was seen in Eyam, UK. This remote tiny hamlet
50 was hit by the Great Bubonic Plague. It was apparently infected via flea-infested clothes
51 arriving from the already plagued London. Following the perishing of the first victims, the
52 rector of the village, William Mompesson, decided to quarantine the village, in order to

53 prevent its further spread. Despite not being very popular, he convinced his parishioners to
54 close the village, neither allowing anyone in nor out. He was fully aware that this was a death
55 sentence for many of those who stayed and were not yet infected – including his wife who
56 succumbed to the pestilence, though he himself survived the infection. Such actions required a
57 lot of stamina from the villagers, as most business and trade suffered from this self-imposed
58 isolation during 4 months, not to mention the psychological effects of not receiving family
59 and friends, and to depend on external delivery of food and other goods. A strong conviction
60 was surely needed to overcome these human needs, and surely the actions can be described as
61 selfless or altruistic, as almost half of the Eyam villagers succumbed to the disease, but
62 avoided spread to other communities.

63 In Islam, the prophet Muhammad (570-632) said “If you hear of an outbreak of plague in a
64 land, do not enter it; but if the plague breaks out in a place while you are in it, do not leave
65 that place” (2). In 639, the commandment of the prophet Muhammad was executed by the
66 Caliph Umar ibn al-Khatab and his top commander Abu Ubayda ibn al-Jarrah during the
67 plague of Amwas (a village near Jerusalem). When reminded by the citation of the Prophet,
68 the Caliph interrupted his expedition toward Syria, where the plague was spreading, and
69 returned with his companions to Medina, the capital, saying his famous Islamic expression
70 “We flee from the God’s destiny to God’s destiny”. His top commander refused to leave
71 Syria, even if he received the convocation of the Caliph to meet him, recalling the prophet’s
72 commandment prohibiting Muslims to fleeing or enter a plague-affected land. Regrettably, the
73 plague ended up killing up to 25,000 soldiers and their relatives, including Abu Ubayda ibn
74 al-Jarrah.

75 Thus, isolating entire areas, as exemplified in the history to prevent further spread of a
76 pandemic, impedes among other, pre-symptomatic individuals moving to neighboring places,
77 infecting fellow citizens and reducing the exchange of contaminated goods. In these isolated

78 areas, the number of fatalities was striking, but the human sacrifice was not in vain as it
79 allowed to save surrounding communities. This has also been realized in earlier cultures.
80 Smallpox, plague and cholera were often associated with avoiding villages or marking a
81 certain area by putting a flag at the top of a tall object such as a tree to denote possibility of
82 disease spread. In the Chinese Tang Dynasty, Buddhist monks isolated and treated patients
83 with infectious disease in their temples. As recorded in the Book of Changes (1046-771 B.C.),
84 if you feel sick, you should actively isolate yourself to avoid further spread. In Hinduism,
85 after the death of a relative, family members observe an isolation period from the public, a
86 practice that prevents potential diseases spreading from a corpse.

87 Interestingly, such altruistic appearing behavior including self-imposed isolation is also
88 practiced by many social animals faced with deadly infectious diseases, including honeybees,
89 ants, and badgers who die far from their congeners in isolation (3). Self-withdrawal is also
90 observed in ill dogs who leave their owners, dying alone (3). Thus, collective behavior
91 defense strategies based on an altruistic approach, as applied by our ancestors, appears as a
92 natural and very effective method to protect communities against pandemics.

93 Collective altruistic behavior, whether based on religious conviction or on other ethical
94 considerations and cultural factors, prevents the community against individual, irresponsible
95 and super-spreading behavior exerted by a minority. Regarding COVID-19, only 10% of the
96 population was said to be responsible for 80 % of its transmission (4,5). Even when seen from
97 a modern clinical vantage point, such early isolation measures appear most efficient.
98 Asymptomatic, pre-symptomatic individuals and those with mild symptoms constitute the key
99 to the COVID-19 transmission (4,5); alone the pre-symptomatic SARS-CoV-2 infections may
100 suffice to sustain the pandemic (6).

101 In Wuhan, the recent several-month strict lockdown could not have succeeded without the
102 long-established isolation rules and deep-rooted collectivism teachings embedded in

103 Confucianism, the core belief of Chinese, Japanese and other Asian populations. For instance,
104 in *The Analects of Confucius* (475-221 B.C.), it is documented that ‘‘Confucius’ student Ran
105 BoNiu who caught an infectious disease (scabies), was only visited by Confucius from the
106 window’’.

107 Consequently, such religion-driven behavioral patterns have been aiding to limit the spread
108 of infectious diseases. As demonstrated by our ancestors during pandemics, our modern
109 society still relies on such altruistic attitudes, limiting the spread of infections, including self-
110 isolation, social withdrawal/distancing and quarantine.

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116 **References**

117

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142 **Figure legend**

143 **Figure 1.** Interrelation of altruistic behavior in the background of religion and its relation to
144 disease spread during a pandemic such as COVID-19. Fear of fine/punishment and social
145 outing may likewise play a role. As history has shown, religion is an important element of
146 worldwide culture that has been influencing human behavior, thinking, ideals and moral
147 concepts, among others. During the history of the *Homo sapiens*, altruistic ancestral behavior,
148 also independently from race, religion and geography, is a common and shared legacy for all
149 of humanity, on which one may contemplate and learn lessons from our heritage.

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