

## Measuring discrepancies between knowledge, preoccupation and fear of aids in populations

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Social sciences paradoxically remain under a cloud when governments and people are worried by social problems<sup>1</sup>. The aids pandemic requires a coordinated research effort on vaccines, drugs, human behavior and education to cope with individual, social, political, economic and cultural reactions to human immunodeficiency virus (HIV) infection<sup>2,3</sup>. At one hand, a biological virus named HIV has been identified as the causative agent of aids<sup>4</sup>, a devastating disease that ends in death. On the other hand, a “social virus”, fear of aids, is the cause of individual symptoms such as anxiety, hypochondria and distress<sup>5,6,7,8</sup>. At a community level, this “social virus” causes discrimination and stigmatization, conducive to coercive measures against seropositive or ill people<sup>3,9,10,11,12</sup>, who could be socially “killed” well before biological death<sup>13,14,15</sup>.

Measuring such social aspects of the aids epidemics is a key issue to generate appropriate prevention messages and to monitor their effects both positive and negative. Many studies have drawn attention to preoccupation and fear of aids in the general population and among certain occupational groups, especially health care workers<sup>9,16,17,18,19</sup>. However, a standardized framework of analysis for preoccupation and fear is still lacking, as well as a set of quantitative indicators.

This paper presents a method aimed to quantify, in a given population, discrepancy between knowledge at one hand, preoccupation and fear on the other hand. An application of the method is made with data recently gathered in Switzerland.

### Methods

*Knowledge* related to aids is defined as the “theoretical” knowledge related to HIV transmission. It can be measured by direct questions in health survey (face-to-face or phone interview) related to non viable route (NVR) of HIV transmission, e.g.: “*Can HIV be transmitted by a shared drinking glass?*”.  $K_x$  is the percentage of population agreeing with the statement, thus wrongly thinking HIV can be transmitted by NVR,  $x$ .

*Preoccupation with aids for a given NVR* is defined as the daily life anxiety related to situations known to be NVRs of HIV transmission and involving

contacts with unknown people. Preoccupation may be measured by questions like “*Since knowing about aids, are you worried about drinking from the same glass as someone you do not know well?*”.  $P_x$  is the percentage of population agreeing with the statement.

For a given NVR, one can adjust the level of preoccupation by the level of knowledge: this corresponds to the daily life anxiety existing despite available knowledge within the population. A simple tool to get a quantified tool of *preoccupation adjusted for knowledge*, for a given NVR ( $x$ ), is  $IP_x$ , the ratio of  $P_x$  over  $K_x$ :

$$IP_x = P_x/K_x$$

*Fear of aids for a given NVR* is defined as the refusal of situations related to NVRs of HIV transmission and involving contacts with seropositive people. Fear can be measured by questions like “*Would you advise a friend to drink from the same glass as a seropositive person?*”.  $F_x$  is the percentage of the population agreeing with the statement. As for preoccupation, the index of *fear adjusted for knowledge* is defined as the discrepancy between fear and knowledge, and quantified by the ratio  $IF_x$ , defined as:

$$IF_x = F_x/K_x$$

Thus, for a given NVR,  $K_x$  correspond to the proportion of population not adequately informed, while  $P_x$  and  $F_x$  represent the proportions of people who feel worried and/or are fearful.  $IP_x$  and  $IF_x$  are dimensionless indices, adjusting the levels of preoccupation and fear by the level of knowledge, therefore allowing a standardized comparison between NVRs. Note that such a discrepancy between preoccupation (or fear) and knowledge is a population discrepancy, since information is not linked at the individual level.

### Applications

This method has been applied to data gathered in November 1989 by a phone survey conducted on a representative sample ( $N = 1007$ ) of the Swiss adult population aged 20 to 70<sup>20</sup>. In Switzerland, a

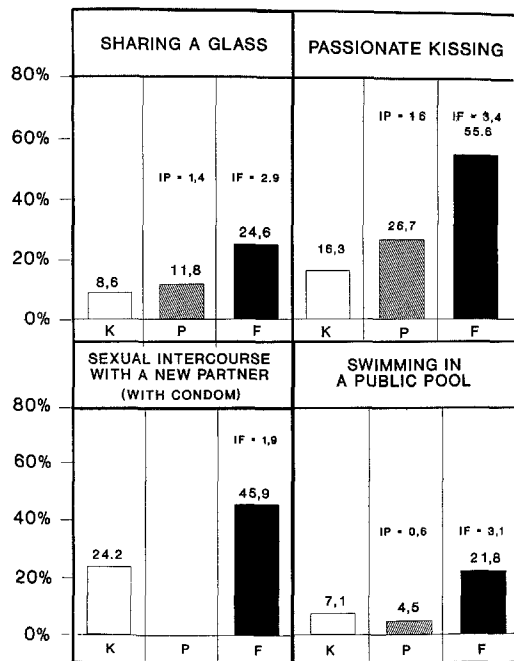


Fig. 1. Levels of knowledge (K), preoccupation (P) and fear (F), and related indexes (IP and IF) for 4 non-viable routes of HIV transmission.

nationwide prevention campaign is ongoing since 1987<sup>21</sup>. According to the messages conveyed, specific NVRs of HIV transmission are skin to skin contact (i.e. handshake, kiss on the cheek), use of public toilets, bathtubs or swimming pools, share of food utensils, kissing with exchange of saliva, sexual intercourse with a condom.

Figure 1 presents the indicators of knowledge, preoccupation and fear for four NVRs surveyed. "Sharing a glass" is a quite typical situation, with a reasonable degree of knowledge (K less than 10%), a somewhat higher level of preoccupation (11.8%), and a still higher level of fear (24.6%). The indices are therefore higher than 1 for both preoccupation and fear, with IF greater than IP.

"Passionate kissing" shows a similar picture, although with a less optimal level of knowledge (K = 16.3%). The standardization of the level of preoccupation and fear allows to adjust for the level of knowledge: IP and IF are therefore quite similar in this situation (IP = 1.6 and IF = 3.4) when compared to the previous one, "sharing a glass" (IP = 1.4 and IF = 2.9). Higher indices observed for "passionate kissing" than for "sharing a glass" might be related to the type of situation, closer of sexual activity in the first situation than in the second.

Knowledge regarding "sexual intercourse with a new partner with a condom" is somewhat poorer (K = 24.2%). Because of that, and despite the fact that the related fear is quite high (45.8%), the index of adjusted fear is not very high (IF = 1.9).

"Swimming in a public pool" shows a situation where the index of removed fear is as high as for the

preceding NVRs (IF = 3.1), despite the fact that the proportions of adequate knowledge and fear are both low (K = 7.1% and F = 21.8%). On the contrary, level of preoccupation is low (P = 4.5% and IP = 0.6%); this might be due to the fact that the use of public pool is a much commoner situation than the other situations presented above. It is likely that for these common situations, people adjust their preoccupation to the high frequency of the situation.

In a separate paper, fear has been analyzed for seven NVRs, and related to age, educational and cultural background, religious practice and other factors (e.g. knowing a HIV positive person). The values of this index of fear is highly correlated with the willingness to identify HIV carriers in the general population and to take coercive measures against ill or seropositive people<sup>22</sup>.

## Discussion

Prevention campaigns are aimed to increase the knowledge of population regarding the ways of HIV transmission. Knowledge regarding viable routes is important in a first phase, but knowledge related to non-viable routes (NVRs) is equally important in a second phase, in order to minimize undue preoccupation and fear in the population. The indices of preoccupation or fear adjusted for knowledge give a quantitative estimate of the discrepancy between knowledge at one hand, preoccupation and fear on the other hand. There is a striking similarity between the indices of removed fear of aids in the four situations presented here, despite differences between the levels of knowledge: this might suggest that there is some "fixed" amount of unexpressed fear.

Adjusted indices of preoccupation and fear lower than 1 point out to intriguing situation, where daily life anxiety of people is lower than the level of knowledge. This might be occur for a variety of reasons, but is likely to be observed for NVRs related to frequent or common situation (such as "swimming in a public pool", as shown above), so common that preoccupation or fear are removed from the daily life.

This exercise is limited by the fact that attitudes or behaviors are observed through questions, and not through direct observations. Furthermore, the level of knowledge, K, also reflects a mixture of fear, uncertainty and doubt about the messages of the prevention campaigns. However, despite these limitations, these indicators can provide useful information for a better monitoring of prevention campaigns. Furthermore, the indices  $IP_x$  and  $IF_x$  might be useful for predicting the values of  $F_x$  and  $P_x$  from available data on knowledge for each NVR.

## Summary

A simple tool to quantify discrepancies between knowledge, preoccupation and fear regarding hiv and aids is presented. This tool is based on standard questions available in health surveys. Some results using recent Swiss data are presented, and the method is discussed.

## Résumé

### Un instrument de mesure des divergences entre les connaissances, les attitudes et la crainte du sida

Un instrument simple permettant de quantifier les divergences entre les connaissances, les préoccupations et la crainte concernant le sida dans la communauté, est présenté. Cet instrument utilise les données collectées dans les enquêtes de population classiques. Un exemple d'application de cette méthode est présenté, utilisant quelques données récentes récoltées en Suisse.

## Zusammenfassung

### Ein Instrument zur Messung der Divergenzen zwischen Kenntnissen, Verhaltensweisen und der Angst vor Aids

Ein einfaches Instrument, das die Divergenzen zwischen Kenntnissen, Bedenken und der Angst vor Aids quantifiziert, wird vorgestellt. Dieses Instrument verwendet Daten, die in klassischen Bevölkerungsumfragen erhoben wurden. Ein Beispiel zur Anwendung dieser Methode, das auf kürzlich in der Schweiz erhobenen Daten basiert, wird vorgestellt.

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