SOCIAL IMPACT OF CUTANEOUS LEISHMANIASIS IN SOUTH-EASTERN MOROCCO

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Introduction. Leishmaniasis is a vector-borne disease caused by protozoan species of the genus Leishmania and transmitted by different sand fly species of the *Phlebotomus* and *Lutzomyia* genus. The disease manifests as one of three main clinical presentations: visceral, cutaneous or mucocutaneous. Cutaneous Leishmaniasis (CL) is quite common in Morocco and is caused by the anthroponotically transmitted *Leishmania tropica* (*L. tropica*) or the zoonotic *Leishmania major* (*L. major*) species. In some areas both causal species coexist. CL has led to epidemic outbreaks in Morocco in the past, the most recent one occurring between 2008 and 2018 in the Southeast of the country with more than 10.000 recorded cases. Most CL lesions develop on the uncovered parts of the body as those are most exposed to the sand fly bites. In Moroccan patients CL lesions are of the "localized" type and start as one or multiple slowly progressing nodules that subsequently ulcerate. The healing of this skin ulcer usually leads to substantial scar tissue, which can be quite disfiguring.

Aim of the study. The aim of this study is to describe the social burden generated by CL in Morocco, by exploring the community perspective on this illness and social consequences related to CL in the adult population living in rural endemic areas in South-eastern Morocco.

Materials and methods. Data from a study in communities exposed to *L. major* or *L. tropica* in the provinces of Errachidia and Tinghir were used. Twenty-eight focus group discussions (FGDs) were conducted, stratified by gender and tradition of medicine (users of folk versus professional medicine). The data were analyzed using content analysis.

Results and discussion. This rural population most exposed to CL in Morocco lacks access to health care in general and clearly points out there are other major public health issues that need to be resolved. Nonetheless, respondents consider the impact of CL lesions and scars as important and similar to that of burn scar tissue. Young women with CL scars in the face are stigmatized and will often be rejected for marriage in these communities. People usually try a long list of folk remedies on the active lesions, but none was felt adequate. There was a clear demand for better treatment as well as for treatment of the scars.

The explanation used by these rural community locates the origin of CL clearly in the natural world: the causal link between the insect bite and the skin lesion is made very clearly and specifically, even if the insect is mostly (and erroneously) identified as a mosquito, whereas it is in fact a sand fly. Risk factors for CL are also very correctly identified as all factors that increase vector abundance. One could ask if the link with rodents is made sufficiently strong in the *L. major* areas. Unfortunately, there is so far, no effective and sustained community involvement in CL control. Any ongoing reservoir or vector control interventions target perceived immediate risks, like the threat of wild rodents to the agricultural production or the insect nuisance preventing a quiet night sleep in summer days.

At closer examination of the notion of stigma surrounding CL, it seems that this is mostly linked to scars on the face, and then mostly in young women. This type of lesions is only a small subgroup of all the CL lesions. In our study CL seemed a lesser problem in the group of users of "folk medicine", as they seem to care less about the scars. Due to their very harsh everyday life conditions another scar may then make little difference. The main contrast between users of the folk and allopathic tradition was that the latter considered the CL scars as an unsatisfactory sequela requiring an effective medical solution. It may be interesting to conduct further research on differences in perception according to causative species. The larger size of CL and CL scars may generate more concern in the *L. major* than in *L. tropica* areas, though the latter lesions are more protracted.

Health seeking behavior patterns for CL and CL scars were multiple and overlapping encompassing the health care traditions of self-help, folk and allopathic medicine. The effect of the toxic and abrasive products and burns used in self-remedies and by traditional healers on the extent of scarring should not be underestimated, and there is a scope for better information and education of the community in this field.

Conclusions. The psycho-social impact of CL due to *L. major* and *L. tropica* is substantial, especially for young single women with facial scars. These generate social and self-stigma and diminish their marriage prospects. CL is well known, but not considered as a major health priority by these poor rural communities in South-eastern Morocco where gender discrimination is still an issue and access to basic health care is as neglected as CL. Early CL diagnosis and new treatment options with better skin outcomes are urgently needed.

In conclusion, this qualitative study is the first in Morocco to address the perspective of the population on CL and CL management. As all qualitative research, its main limitations lie in the generalizability or what is called its external validity. Said otherwise, to what extent are our findings representative for other provinces in the country and region? As our findings are consistent though with a larger body of evidence from quantitative a number of Knowledge, Attitude and Practices studies and psychological assessments by questionnaire surveys and with qualitative research based on FGD conducted earlier in Afghanistan and Surinam, we believe the findings are robust and should inform policy. CL is a true problem in this region, very much intertwined with gender discrimination and lack of access to basic health care in remote rural areas. In dialogue with the community, sound prevention and control policies should be designed. One of the main implications of our findings was that innovation in CL early diagnosis and treatment is desperately needed. The management of existing disfiguring CL scars remains also a subject of further research. In summary, CL is well known but not considered as a major health priority by these poor rural communities in South-eastern Morocco with lots of competing health problems. Its psychosocial impact is substantial though and can be in some cases very important, especially for young single women with facial scars, generating social and self-stigma and diminishing their marriage prospects. A new treatment for CL with better skin outcomes is urgently needed.