Results: generating candidate mechanisms

The initial explanatory framework of behavioural HIV prevention explored themes in the literature in relation to 'how' and 'why' interventions with immigrants were supposed to work and their limitations [1-3]. A dominant theme was one where 'cultural appropriateness' was assumed as a key principle for interventions in this area but where this principle was rarely defined or discussed in detail [4-9]. Even though 'culture' is a broader term, the term as used in this literature was narrower and more or less synonymous with ethnicity [6]. Another dominant theme was a strong critique of the cognitive and behavioural individualistic approaches to HIV prevention, mainly for their failure to account for the social and cultural influences, as well as the structural and environmental constraints which might impede behaviour change among immigrants [9-17]. In response to this pervasive critique there are a range of techniques of adapting interventions to 'suit' the 'culture' of the target group in the literature [8, 18-23].

Two key adaptation activities frequently cited in the literature were staffing the intervention with bicultural staff who were 'matched' to the target population, [6, 7, 9, 17-19, 22, 24-27] along with responding to the linguistic needs of the target population [5, 9, 16, 18, 22, 26-28]. A third adaptation activity related to adapting the intervention content to achieve congruence with the target audience in terms of values, norms, symbols or metaphors [6, 9, 14-20, 24, 26, 27]. Planning and implementing the intervention to respond specifically to the ethnicity of the target population was a fourth adaptation activity in the literature (e.g., targeting Mexican rather than Hispanic immigrants) [7, 10, 20, 24, 28, 29]. Delivering the intervention in settings and through structures familiar to immigrant populations such as places of worship, beauty salons, or through immigrant mass media was a fifth adaptation activity [5, 15-17, 20]. Securing the endorsement of the target population through consultation processes was cited as another potential adaptation activity to achieve 'cultural appropriateness' in interventions with immigrants [9, 13, 20, 27, 28, 30]. Another less cited adaptation activity centred on the degree to which the goals of the intervention 'matched' immigrant community expectations around the effectiveness of the intervention [7, 16, 23, 26, 31]. These broad adaptation activities were theorised to be across the dimensions of 'staffing', 'language', 'content', 'ethnic diversity', 'settings', 'community consultation' and 'priority setting' and led to the development of the initial program theories summarised below.

Results: adaptive mechanisms

These intervention adaptation activities – 'staffing', 'language', 'content', 'ethnic diversity', 'settings', 'community consultation' and 'priority setting' – were then further tested using methods [32, 33] against the literature from the 'known studies' and other studies to populate seven intervention 'chains', each made up of activities, mechanisms, response and resistances.

The 'staffing' and 'language' adaptation activities were widely reported in the literature on HIV prevention among immigrants in high-income countries [10, 16, 28, 34-49]. The responses of immigrant participants to the 'matching' of 'staffing' was that the intervention was 'for them' – as the staff delivering the intervention were 'like them' [10, 16, 28, 34-49]. The mechanism involved in 'staffing' was thus theorised to be around the '*authenticity*' of the intervention. The responses of immigrants to the 'matching' of 'language' was that, as the intervention was in their first language, it was possible for them to understand the intervention [10, 16, 28, 34-49] and the mechanism involved in 'language' was theorised as being around *'understanding'* the intervention. Using an example of an intervention with Latino immigrants in the USA, '*authenticity*' and '*understanding*' mechanisms were hypothesised to operate when, for example, Latino facilitators delivered a series of HIV education sessions to groups of Latino immigrants in Spanish.

In terms of the 'content' and 'ethnic diversity' adaptation activities, intervention participants responded positively to the 'matching' of the intervention 'content' as it was congruent with elements of their own culture [10, 16, 34, 35, 37, 38, 43, 44, 46, 47, 49, 50]. Thus the theorised mechanism involved in 'content' activities was around the '*consonance*' of the intervention. When interventions were targeted in terms of 'ethnic diversity' participants indicated that the intervention was specific to their ethnicity [10, 37, 40, 43, 47, 49]. The theorised mechanism involved in 'ethnic diversity' activities hinged on the '*specificity*' of the intervention. Sticking with the example of an intervention with Latino immigrants '*consonance*' was hypothesised to be operating when Latino cultural norms such as *machismo* were drawn on for the intervention content. '*Specificity*' was hypothesised to be operating when Mexicans, rather than Latinos, were specifically targeted by the intervention.

The 'settings', 'community consultation' and 'priority setting' adaptation activities were cited less frequently in the literature than other adaptation activities [10, 16, 34, 35, 37, 38, 40, 42, 43, 49, 51-

53]. Intervention participants were reported to respond positively to engaging with interventions in familiar 'settings' like cafes or mosques or through immigrant media [10, 16, 34, 37, 38, 40, 42, 43]. This pointed to a theorised mechanism involved in 'settings' activities that drew on the '*embeddedness*' of the intervention. 'Community consultation' activities were reported to result in greater support from immigrants for intervention strategies [16, 35, 37, 49, 51-53] which indicated that the underlying mechanism involved was one of '*endorsement*'. Finally, the 'priority setting' adaptation activity was reported to result in immigrant participants' expectations being more strongly aligned with the intervention goals and intended outcomes [10, 43] and could enhance the 'match' between intervention outcomes and immigrant expectations of effectiveness [31]. The mechanism theorised to be involved in 'priority setting' was around the '*framing*' of the intervention. Keeping with our example of an intervention with Latinos in the USA, '*embeddedness*' is hypothesised to operate in an intervention being delivered at farms where Mexican migrant day labourers work. The '*endorsement*' mechanism operates when an intervention consults extensively with Mexican immigrants to garner their support for intervention strategies. Finally, the '*framing*' mechanism is operating when an intervention for Mexican immigrants engages with a Mexican community organisation in 'priority setting' around intervention outcomes. These seven mechanisms were theorised as the key, rather than the only, interrelated mechanisms contributing to cultural appropriateness in interventions with immigrants. These mechanisms typically needed to be inferred from the literature as most reports and studies only referred to health promotion theories such as the Health Belief Model, Stages of Change Model or Social Cognitive Theory as the key theories underpinning interventions with immigrants.

The adaptation activities can also be resisted by participants pointing to why things 'went wrong'. At a staffing level intervention participants might resist 'matching' [54] staff along the lines of ethnicity and have a better response to 'experts' [25]. The strength of targeting using ethnicity may lead to stereotyping of immigrant communities and face resistance. Cultural community norms which are integrated into the content of an intervention may promote or impede HIV prevention efforts [55] or an intervention may be seen as too progressive by promoting the rights of women or gays [13, 55]. An extension of this kind of resistance in immigrant community settings and institutions could explain the sometimes hostile responses to HIV agencies which attempt to build alliances or gain endorsement for interventions [51]. For example, immigrant religious institutions may be particularly unwilling to engage given what they may perceive as a contradiction between their role as sources of compassion and guardians of morality [53].

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