

Using Ambient Media to Promote HIV/AIDS Protective Behaviour Change

by

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ABSTRACT

To date, more than 19 million people have died from AIDS and nearly 40 million are HIV positive. Behaviour change communication campaigns have been implemented, with varying degrees of success, to initiate and sustain proactive behaviour among target groups at risk of HIV. The efficacy of these campaigns may be enhanced by focusing on behavioural determinants including recipient knowledge and attitudes about HIV/AIDS as well as perceptions of personal risk. This study therefore examines a pilot program designed to assess the utility of using ambient media to influence young adults' intentions to engage in proactive HIV/AIDS prevention strategies. Ambient media, in the form of washroom posters, were used in high-risk settings such as Indonesian bars and cafes. Results indicated individuals exposed to the ambient washroom poster were more likely to report AIDS messages had strongly influenced them to change their lifestyle in order to minimise infection risk and to use condoms as a means of reducing their infection risk. A comparison of 'high risk' intervention and control cases revealed those exposed to the washroom poster were more likely to acknowledge they were at personal risk of AIDS. Future research needs to examine the degree to which reflective mirrors embedded in posters enhances message personalisation. A number of other findings are important to note. Knowledge of transmission vectors appeared variable, with some modes being better understood than others.

Keywords: AIDS, HIV, behaviour change, personal risk perception, ambient media.

Introduction

Acquired Immunodeficiency Syndrome (AIDS) and human immunodeficiency virus (HIV) are major health issues facing developing and developed nations alike. Since HIV/AIDS first emerged in 1981, it is estimated that at least 25 million individuals have died of this disease. In 2005 alone, around 3.1 million (range 2.8-3.6 million) people were reported to have died of AIDS related deaths (UNAIDS/WHO 2005). In addition, the number of people living with HIV- the precursor to AIDS- continues to grow. Around 40.3 million (range 36.7-45.3 million) people were reported to be living with HIV in 2005. During the same period an average of 4.9 million (4.3-6.6 million) new infections were reported (UNAIDS/WHO 2005). Although Sub-Saharan Africa continues to have the highest numbers of people living with HIV, (an estimated 23.8 to 28.9 million), other regions, including Eastern Europe and Central Asia, are showing increasing infection rates.

Of particular import to the current paper are recent statistics indicating that Indonesia appears to be on the verge of a serious HIV/AIDS epidemic (UNAIDS/WHO 2005). Major contributing factors to this worrisome trend include inappropriate injecting drug usage and the consumption of commercial sex (UNAIDS/WHO 2005). Prevention of HIV infection is recognised as a key factor in the fight against AIDS epidemics. The importance of HIV prevention has long been on the Indonesian Government's agenda. In 1994, the Government of Indonesia requested assistance from the Australian Government to help improve multi-sectoral HIV/AIDS and sexually transmitted disease (STD) prevention and care. The request emphasised the need for medical and educational equipment and supplies as well as technical assistance and training. The request resulted in the HIV/AIDS and STD Prevention and Care Project, which commenced in 1995.

This article is set out as follows. First, we review relevant theory relating to behaviour change communication. We then introduce a biopsychosocial model of health as a conceptual

framework for the study. Next, we review message delivery channels, focusing specifically on ambient media. The pilot project is then outlined and results presented. This is followed by a detailed discussion of findings, the drawing of conclusions, acknowledgement of limitations and suggestions for future research opportunities.

Literature Review

Given the scope of the current study, the literature reviewed is focused on ways to enhance personal risk perception amongst message receivers in order to elicit proactive change behaviours among young adults. The rationale for focusing on HIV/AIDS prevention amongst young adults is supported by a recent report indicating those most at risk of HIV/AIDS are drug users, who in turn are predominately young in age (Riono & Jazant 2004).

A number of behaviour change theories have been proposed to assist communication program designers to develop more effective interventions. Information Education and Communication (IEC) and Behaviour Change Communication (BCC) theories developed in the past six decades include Diffusion Theory, (Ryan and Goss, 1943, Rogers, 1962), the Fear Drive Model (Boer & Seydel, 1996), the Health Belief Model (Janz & Becker, 1984), Protection Motivation Theory (Rogers, 1975) and Stages of Change Model (Prochaska et al., 1992). This list is by no means exhaustive and serves only to identify the increasing levels of complexity involved in developing effective HIV/AIDS communication and behaviour change strategies. In relation to youth health promotion programs, Kelder et al. (2000) have argued that “Social Cognitive Theory” has been shown to be particularly useful.

Conceptual Framework

The biopsychosocial model of health has been used as an overarching conceptual framework for the current study. This model is useful to facilitate an integrated understanding of health by

focusing on the interrelations between the biological, psychological and social aspects of a person's life (Engel, 1977, 1980). A basic tenet of the biopsychosocial model is that the concepts of health and general wellbeing are founded on complex feedback loops, thereby rendering any study of isolated components incomplete and at risk of overlooking essential interactions (Caltabiano, Byrne, Martin, & Sarafino, 2002). As such, the model closely aligns with the World Health Organisation's (1948) conceptualisation of health, which encompasses the physical, mental, and social wellbeing of the individual.

In the context of the current study we are investigating young adult's knowledge of HIV/AIDS, their perceptions of personal risk in contracting this virus, and their actual intent to engage in proactive behaviours directed at lowering their health risk. We seek to identify whether exposure to behaviour change ambient media facilitates core behavioural actions among young adults in general as well as those deemed to be at 'high-risk' of HIV/AIDS. As such, we encompass the key domains of the aforementioned biopsychosocial model of health.

Message Delivery Channels

An important precondition to eliciting and sustaining behaviour change is the identification and utilisation of appropriate message delivery channels to reach target audiences (Shimp, 2000). Media communication channels have traditionally included electronic, print, and outdoor media as well as sponsorship and merchandising. More recent communication channels include the Internet, product placement, computer games, and ambient media. Because of the high levels of diffraction in main media reach with rural market segments in developing countries, community based interpersonal communications (IPC) have become particularly important components in the communication-behaviour change matrix. Strategies designed to positively engage certain high-risk community cohorts are also vital.

The UNAIDS/WHO (2005) report identified inappropriate injecting drug use as one of the primary initial transmission vectors in Asia. As indicated by the Monitoring of the AIDS Pandemic Network (MAP) 2005 report, HIV can spread into the wider community when infection rates among HIV-infected injecting drug users reaches a critical mass. The reason is that many of these individuals use sexual intimacy as a commodity to either purchase or sell (MAP 2005). This means of transmission appears to be well in progress within Indonesia as well as in parts of China and Vietnam (UNAIDS/WHO 2005). These findings support Bush, Ortinau & Bush's (1994) contention that marketing efforts have not been successful in either reaching or affecting behaviour change among certain segments of young 'at risk' adults. Bush and colleagues argued the importance of communication planners being cognisant of the social, cultural, and environmental factors that may increase the risk of HIV/AIDS among young adults. Furthermore, they emphasised the importance of developing and delivering messages in formats or settings that are relevant and conform to the socio-cultural norms of 'high-risk' youth (Bush et al. 1994). Ambient media, in the form of washroom posters in bars and clubs, is one media channel that appears to meet these requirements.

Defining Ambient Media

The breadth of opportunities afforded by ambient media is extensive. Examples of ambient media opportunities include messages embedded on airline lunch trays, supermarket trolley posters, floor graphics (Cook 1999) and toilet posters (Nicholas 1999). Ambient media is one of the fastest growing media sectors (Grossmann 2000; Beale 1999; Shankar & Horton 1999; Woolgar 1999; Snoddy 1998). The rapid expansion of this medium is likely attributable to its low cost and targeted reach.

The bathroom or 'washroom' sector is seen as one of the most popular forms of ambient advertising. The messages can range from low cost fly posting stickers above urinals through to

the more sophisticated use of mini-posters designed to be vandal and graffiti proof. One of the strongest selling points of this particular medium is that it appears to reach the elusive 18 to 35 year old age cohort (Nicholas 1999).

Utilisation of Ambient Media in an Asian Context

The need for more comprehensive information to be made available to the Indonesian community on HIV/AIDS transmission and prevention has been identified (Ruddick 1999; Utomo 1999). In particular, the Ruddick (1999) report recommended that the perception of risk held by specific groups within the community required change and advocated the use of segmented, consistent, and repeated mass education campaigns to achieve this goal. In the context of the current study, the placement of ambient messages in washrooms of facilities frequented by target groups at risk of HIV/AIDS infection would appear efficacious. Moreover, it is likely that behavioural intentions towards drug taking and sexual transactions would be prevalent in social settings such as bars and clubs. Coupled with the well-established link between alcohol and drug consumption and unsafe sex practices, it seems highly likely that washrooms co-located in cafés and bars would provide ideal opportunities to deliver messages on HIV/AIDS prevention.

STUDY RATIONALE AND DESIGN

The study uses a community-based media intervention to examine the efficacy of ambient media in promoting HIV/AIDS protective behaviours. A quantitative quasi-experimental approach was deemed appropriate for conducting applied in-field research. The aim of the campaign was to personalise the risk of HIV/AIDS infection via a washroom poster emphasising that AIDS is a problem facing all individuals within the community – not just ‘high risk’ groups. The fieldwork was undertaken in Indonesia. The four key research objectives pertained to respondents’ (1) knowledge of HIV/AIDS transmission vectors; (2) perception of the target audience of prevention

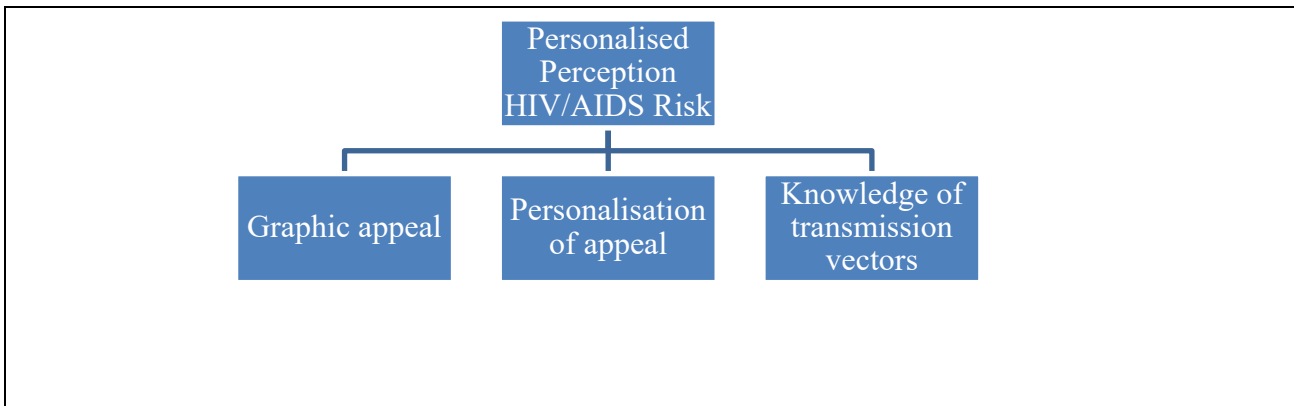
messages; (3) personal perception of HIV/AIDS risk; and (4) behavioural intent with respect to AIDS prevention.

Preliminary project development

The intervention used in this study was based on feedback from a range of community sources including a comprehensive stakeholder survey conducted in the Indonesian provinces of Bali, South Sulawesi, and East Nusa Tenggara, as well as donor and lead agency consultations. A total of 155 respondents from 14 stakeholder groups took part in the survey. A number of structured focus group discussions were also conducted with high-risk respondents including commercial sex workers [CSWs], gay and transvestite groups, and injecting drug users. Feedback from the preliminary background work was used to develop a project brief and to commission a local advertising agency in Jakarta to develop creative concepts for the washroom posters.

The results of the background survey led to the formulation of a washroom poster incorporating relevant HIV/AIDS prevention information in a novel and persuasive format (see Figure 1). The key objective was to provide a message format concerning accessible solutions to key transmission vectors in a way that had both personal and emotional appeal. The emphasis on personalising the message format was supported by the community data which indicated that denial of HIV risk was prevalent within the Indonesian community. Similarly, projection of HIV/AIDS risk onto other communities or individuals was also high. To address the issue of message personalisation, a mirror like surface was embedded into the poster so that the image of each reader was reflected into the actual message.

Figure 1: Strategic framework for the ‘washroom’ intervention



Phase One: Pilot project

The pilot project occurred in two phases and with funding provided by AusAID. During stage one, the final design chosen by the project management team (see Figure 2) was pre-tested among 10 focus groups to examine the efficacy of the ambient media to stimulate interest, increase knowledge, and enhance recall, of key HIV/AIDS messages. The objective was to see whether the poster encouraged respondents to personalise the risk of HIV. Key variables examined during phase one included the creative execution and message delivery (novelty appeal), personalising aspects of the appeal (salience), and informational aspects of the appeal (knowledge gained). Other spontaneous emotional responses were also recorded.

[INSERT FIGURE 2 HERE]

Focus group respondents came from a mix of socio-economic and age groupings. In addition, at least 50% of each group comprised respondents classified as having ‘high risk’ HIV/AIDS attitudes and behaviours. ‘High risk’ individuals were identified as having multiple sex partners, customers of commercial sex workers, men who had sex with men, and/or drug users. To gauge the potential of the ambient media appeal to further marginalise this vulnerable cohort of individuals, an additional focus group comprised of people living with HIV/AIDS was also undertaken. Each focus group comprised around eight respondents and lasted approximately two hours.

Feedback from focus group respondents indicated the ambient media appeal was spontaneously appreciated as an innovative and creative idea. One participant stated *“I have never seen a poster like this. I can see myself in the mirror. It’s fantastic.”* The majority of respondents revealed that the most attractive elements of the poster for them was the mirror, as it created ‘further curiosity’ and would gain washroom users’ attention because of its uniqueness. *“The first time they look at it, I believe they will be curious, because it’s new and unique.”*

In order to enhance the visual appeal of the poster, respondents suggested a number of minor modifications involving font size, and colour changes were made to the tagline *“AIDS. Kita bisa kena, kita juga bisa cegah”* (AIDS, anyone can get it, we can all prevent it) to make it eye-catching. Feedback on the ambient media appeal concept was also elicited from approximately 120 programme stakeholders, during stakeholder consultations. The vast majority of stakeholders were very enthusiastic about the behaviour change potential associated with using the washroom poster.

Phase Two: Pilot study

The fieldwork for phase two, hitherto termed ‘pilot project’ was undertaken over a one-month period. The limited data collection period was used to minimise any contamination of results from history, maturation, testing, and instrumentation effects. The data were collected using questionnaires administered by a trained local field team, with interviews with respondents conducted inside and outside of café and bar establishments.

The field experiment was conducted in Jakarta at four café and bar locations. The intervention and control sites each comprised one bar and café. The intervention was designed to occur in a non-contrived setting with a minimal degree of researcher interference. The only manipulation of the settings was the inclusion of the washroom poster stimuli in the designated intervention bar and café.

The poster frames were affixed to toilet doors and washroom walls above urinals (see Figure 3). To minimise control group respondents being exposed to the intervention, washroom posters were located in the designated bar and café approximately one week prior to the research being conducted. Field workers were also briefed to check the condition of the ambient media in the intervention bar and café prior to commencing the patron questionnaires.

[INSERT FIGURE 3 HERE]

Respondents

The respondents constituted a convenience sample of bar/café patrons visiting either the intervention or control sites. A total of 166 (84 male and 82 female) intervention and 166 (79 male and 87 female) control group respondents agreed to participate in the pilot study questionnaire. A quota sampling protocol was implemented to ensure that approximately 50% of the intervention and control group respondents could be classified as being at ‘high-risk’ of HIV/AIDS infection. ‘High risk’ was operationalised to include males and females who met any one of the following criteria: multiple sexual partners, clients of commercial sex workers, men who have sex with men, and/or individuals positively predisposed to drug use. The total number of sampled patrons, by group, is presented in Table 1.

[INSERT TABLE 1 HERE]

Measures

To minimise the time burden on potential respondents, the questionnaire items were organised to provide a logical sequencing of the key research indicators. The items were designed to explore the following issues pertaining to HIV/AIDS: awareness, sources of transmission, perceptions of personal risk, personal relevance of prevention messages, attitudes towards prevention messages, behavioural intentions regarding risk factors, and perceptions of Government action with respect to this issue. Socio-demographic information was also identified through a screening questionnaire to identify ‘high risk’ respondents.

Procedure

As the original questionnaire was formatted in English, a back-translation of the Bahasa Indonesia version into English was undertaken by a bi-lingual expert in Indonesian and English. The final questionnaire has been piloted by fieldworkers with a sample of 8-10 respondents to ensure that there is no ambiguity and the conceptual equivalence of the questions has been maintained. Negotiations were also conducted on the optimum scaling requirements for Indonesian audiences, prior to finally deciding on the types of scales to be used.

The research questionnaire was administered by trained, indigenous field workers, via face-to-face interviews. This form of administration permitted the field team to pick-up on non-verbal cues and provide clarification, where needed, by repeating or rephrasing questionnaire items. To ensure identical interview techniques were used across the four treatment groups, researcher instructions, tasks, and closing remarks were compiled and field team training undertaken.

Prior to administering the questionnaire, the interviewers checked exposure to the ambient media appeal by asking for each intervention group respondent whether they had visited either of the two intervention site washrooms. All respondents were reassured that participation was voluntary and that their responses would remain anonymous. The issues of maintenance of privacy and confidentiality were discussed with each prospective respondent. Field team interviewers were trained to note, via observation, participant unease and were instructed to terminate the interviews if any resistance was noticed. This issue was particularly pertinent with respect to the 'high risk' group screening questions. Field teams were briefed as to the acceptable parameters for all interviews conducted, and asked to avoid exposing respondents to any undue emotional stress as a result of any questions asked.

RESULTS

The mean age of respondents in the intervention group (mean = 25.14, SE = .331) did not vary significantly from that of the control cases (mean = 24.66, SE = .325), $t(330) = -1.052, p = .294$. The gender split between intervention and control groups was very similar (50.6% males compared to 49.4 females). Chi-square analyses indicated that control cases were more likely to have received a university/academy education [$\chi^2(4) = 0.204, p = .022$], be currently enrolled as a student [$\chi^2(3) = 9.479, p < .001$] and in the top income bracket (A1) [$\chi^2(4) = 10.400, p = .030$] than respondents in the intervention group. Conversely, those in the intervention group were more likely to be looking for work or unemployed and were over-represented in the lower income (C1) bracket. See Appendix 1 for a comprehensive socio-demographic breakdown by group.

A total of 42 intervention and 43 control cases responded 'yes' to the four screening questions used to categorise respondents at 'high risk' of HIV/AIDS (See Appendix 2). Taken item by item, the results of chi-square analyses revealed no significant group differences between the percentages of respondents reporting multiple sexual partners in the three month period prior to the study intervention (Intervention: 31.9%, $n = 53$; Control: 37.3%, $n = 62$). Similarly, levels of drug use among high risk intervention respondents (23.5%, $n = 39$) was similar to that reported by their control counterparts (24.1%, $n = 40$). Compared with control cases (3.6%, $n = 6$), respondents in the intervention group (9.6%, $n = 16$) were more likely to state that they had engaged in sex with a sex worker in the three months preceding the interview [$\chi^2(1) = 4.868, p = .027$]. Male to male sex was also more common among intervention group males (29.8%, $n = 25$) than among their control counterparts (6.3%, $n = 5$) [$\chi^2(1) = 14.886, p < .001$].

The majority of respondents were aware of the ambient media appeal on an unprompted basis (unprompted recall). All intervention group respondents recalled seeing the washroom poster when promoted by being shown a photo of the poster.

Knowledge about HIV/AIDS vectors of transmission

All respondents in both the intervention and control groups reported having heard about HIV/AIDS (see Table 2). Control cases were significantly more likely to report HIV infected blood transfusions as a primary vector for HIV transmission than intervention respondents. This finding may be a random artefact or attributable to the higher level of education among control group respondents. Although not significant, nearly 10% more intervention respondents stated unprotected sex was a main source of HIV transmission than control cases (75.3%, n = 125 and 66.3%, n = 110 respectively).

Irrespective of group, very few respondents reported that breastfeeding was a potential source of HIV transmission. There were low levels of acknowledgement of HIV transmission through casual contact such as using a toilet or kissing a person infected with HIV, indicating that risk groups were aware that HIV is transmitted through more direct vectors, such as blood and body fluids.

[INSERT TABLE 2 HERE]

Target audience for AIDS prevention messages

Chi-square analyses were used to analyse the binary coded questionnaire items relating to perceived target audience for AIDS prevention messages. No significant group differences were noted (see Table 3). While only around one third of the respondents felt that AIDS messages were directed towards them personally (31.9%, n = 53 intervention and 34.9%, n = 58 control), a sub-sample analysis of 'high risk' individuals revealed a somewhat different outcome. Among the subset of 42 intervention and 43 control 'high-risk' cases, the majority felt that AIDS messages were targeted towards people like themselves (61.9%, n = 26 and 53.5%, n = 23 respectively). This finding suggests that ambient media messages have a high level of personal relevance for individuals with 'high risk' behaviours (See Appendix 3).

Around one third of all intervention (34.9%, n = 58) and control (32.5%, n = 54 control) respondents felt that the messages were directed towards commercial sex workers (see Table 3). Few respondents felt that the messages pertained to individuals using commercial sex workers (Intervention: 27.1%, n = 45; Control: 22.3%, n = 37) or towards people having sex without condoms (16.3%, n = 27 intervention and 16.3%, n = 27 control). Similarly, few high-risk respondents stated that AIDS messages were directed towards non-condom users (Intervention: 14.3%, n = 6; Control: 23.3%, n = 10).

[INSERT TABLE 3 HERE]

Personal perception of risk of HIV/AIDS infection

A logistic regression was conducted using group status as the dependent variable and seven personal relevance Likert-scaled items entered as the predictor variables (see Table 4). A total of 332 cases were analysed and the full model was significantly reliable [$\chi^2(7) = 61.974, p < .001$]. This model accounted for between 17 and 22.7 percent of the variance in group status (intervention vs. control). Although 75.3% of the intervention cases were successfully predicted, only 58.4% of the predictions for the control cases were accurate. The overall percentage of correct predictions was 66.9%. Four of the seven personal relevance variables reliably predicted group status (see Table 4). The values of the coefficients indicate that each unit increase in acknowledgement that personal risk of acquiring HIV was associated with an increased likelihood of having been exposed to the intervention, the odds increased by a factor of 3.221. Likewise, the expected beta coefficient for the items “intend to use condoms every time I have sex to prevent getting AIDS” and “AIDS messages have had a strong impact on me and made me want to change my lifestyle” both indicated that unit increased the odds of having been exposed to the intervention by a factor of 1.497. Conversely, each unit increase for the item “I can reduce my chances of AIDS infection by not injecting drugs” was associated with a decrease of 0.385 in odds of being exposed to the intervention.

[INSERT TABLE 4 HERE]

A second logistic regression was conducted with 'high-risk' classification as the dependent variable and the seven personal response items to AIDS messages as the predictor variables (see Table 5). The full model of 85 cases classified as being at high risk of acquiring HIV was significantly reliable [$\chi^2(7) = 18.178, p = .011$] and accounted for between 19.3 and 25.7 percent of the variance in group status (intervention vs. control). A total of 63.5% of cases were correctly classified: 73.8% high-risk intervention and 53.5% high-risk control cases. Only one of the seven personal relevance variables reliably predicted group status (see Table 5). The perception of being at personal risk of AIDS was associated with a marked increase in odds (4.915) of having been exposed to the AIDS ambient media poster.

[INSERT TABLE 5 HERE]

Behavioural intentions regarding HIV/AIDS prevention

Chi-square analyses were used to examine group differences with respect to key behavioural strategies directed towards AIDS prevention (see Table 6). As already noted, the content of the items was elicited from focus group responses. When phase two (Pilot Project) respondents were asked what they personally intended to do about AIDS prevention, a significantly higher proportion of those in the intervention group stated that they would wear a condom, compared to those in the control group (44.6%, $n = 74$ intervention and 32.5%, $n = 54$ control). The most frequently cited behavioural intentions were (i) to abstain from sex (47%, $n = 78$ intervention and 54.2%, $n = 90$ control) and (ii) being faithful to one's partner (53%, $n = 88$ intervention and 43.4%, $n = 72$ control).

[INSERT TABLE 6 HERE]

The majority of respondents, irrespective of group status, reported some level of anxiety about being exposed to HIV/AIDS, with only 15.1% ($n = 25$) of the intervention and 15.7% ($n = 26$) of the control group stating they were 'not at all anxious' (Table not shown). Around four in

ten (41% intervention and 39.2% control) respondents felt that AIDS prevention messages were becoming irritating. However, only a minority of respondents (intervention 0.6% and control 4.2%) reported switching off or being offended by the ambient media messages. Finally, the vast majority of respondents felt that the Government was 'not doing enough' or 'should do more to prevent the spread of AIDS in the community' (intervention 72.9% and 77.7% control). Independent Student *t*-tests revealed no significant differences in the intervention and control group mean scores pertaining to these three issues (Table not shown).

DISCUSSION

We have reported findings from a media intervention designed to ascertain the efficacy of ambient media in promoting HIV/AIDS protective behaviours. A quasi-experimental, in-field approach was used to assess a HIV/AIDS prevention campaign. We had four key research objectives in mind and now relate our findings back to these questions.

Knowledge about HIV/AIDS transmission vectors indicated that general knowledge levels did not vary significantly between groups. However, although not statistically significant, intervention cases were more likely to display a higher level of awareness that unprotected sex was a key HIV/AIDS transmission vector than comparison group respondents. Taken across the different transmission vectors, it is evident that some modes are more commonly understood than others. All respondents, irrespective of treatment group, reported that they had heard about HIV/AIDS. This augers well for HIV/AIDS public health campaigners as the national HIV/AIDS mass media strategy has displayed consistently high and increasing levels of awareness of AIDS, with each subsequent media strategy. Somewhat surprising was the very small percentage of respondents in both groups who acknowledged breastfeeding as a potential source of HIV transmission. While the lack of group difference is likely the result of this mode of transmission not being mentioned in the ambient media stimuli, it does indicate a need for greater public education, particularly among women of child rearing age.

The second objective pertained to the perceived target audience of AIDS prevention messages. Only around one-in-three respondents perceived that HIV/AIDS prevention messages were directed towards themselves. The role of cognitive protective defences (see Raghurir & Menon 1998; Schoenbachler & Whittler 1996; Taylor & Brown 1988) may have played an important part in minimising the impact of the ambient media appeal for some individuals. This supports the preliminary project development data which emphasised that denial of HIV risk was prevalent within the Indonesian community. The results from the sub-group analysis of 'high-risk' intervention and control respondents indicated that personalisation of HIV/AIDS messages increased to more than one-in-two.

Somewhat disturbingly, only around one in six respondents felt that AIDS messages were directed towards people who have sex without condoms. A low percentage of the designated 'high-risk' respondents also stated that AIDS messages were directed towards non-condom users. However, this latter finding may reflect that higher risk individuals taking condom use for granted or completely discount the issue of safe sex. The potential differences in risk perception among low and high risk individuals require further investigation, particularly with the view to personalising health prevention messages.

The third objective of this study dealt with the issue of personal perception of HIV/AIDS risk. Four variables reliably predicted whether respondents were in the intervention or control groups. Importantly, those exposed to the intervention were significantly more likely to use condoms to prevent getting AIDS. Furthermore they were more likely to report that AIDS messages had had a strong impact on them to the point of wanting to change their lifestyle. Similarly, intervention group respondents were more likely to perceive themselves to be at risk of AIDS infection. It could be argued that the reflective surface on the poster helped to personalise the AIDS message by embedding the respondent's own image into the campaign message. The literature indicates that one of the key predisposing factors in eliciting compliance for HIV/AIDS

interventions is to increase the personal perception of risk (Caldwell et al. 1999; Donovan and Henley 1997; Flay 1990; Maddux and Rogers 1993; Maibach and Cotton 1995). The finding that the control group were more likely to report that their chances of AIDS infection were reduced by not injecting drugs is difficult to explain, as there was no difference in reported use of drugs across the two treatment groups.

Those 'high risk' respondents exposed to the ambient washroom poster were more likely to perceive themselves at risk of AIDS than control group respondents. Again, it may well be that the reflective surface of the poster personalised the risk of acquiring this disease. Furthermore, respondents who acknowledged 'high risk' behaviours such as having multiple sexual partners and drug injecting may have had lower cognitive defence mechanisms in place.

Fourth, with respect to behavioural intentions, significantly more intervention group respondents stated their intention to wear a condom compared to those in the control group. Irrespective of treatment group, around one in two respondents intended to abstain from sex and/or be faithful to their partner as a way of preventing HIV/AIDS. Although around three in four respondents had attended a mosque or church in the past month (See Appendix 1), only a minority of respondents stated that they intended to follow the teachings of their faith as a means of AIDS prevention. While it is feasible that sexual abstinence and being faithful to one's partner may have become conflated with religious teachings, it may be useful to investigate the efficacy of AIDS prevention messages emanating from religious leaders. In addition, the low number of respondents intending to seek out further information about AIDS, combined with the high percentage of respondents who stated that they had seen enough AIDS prevention messages or that they were becoming irritated suggests that new methods of community education may need to be pursued.

The high levels of anxiety about HIV/AIDS exposure emphasises the need for continued public information about transmission vectors and proactive behaviours. Around four in ten

respondents from both the intervention and control groups felt that AIDS prevention messages were becoming irritating. This finding may indicate some level of cognitive dissonance in relation to high risk behaviours in the face of HIV threat or boredom. It is interesting to note that very few respondents reported 'switching off' or being offended by the ambient media messages. These findings suggest that the message medium may influence level of irritation. The degree of irritation associated with different message mediums and the level to which irritation translates into diminished adherence to proactive HIV/AIDS behaviours are issues that require careful monitoring by public health educators. In addition, the finding that most respondents perceived that the Indonesian Government could do more in relation to the spread of AIDS in the community has public policy implications.

Limitations

In addition to the standard limitations associated with study-specific self-report attitudinal scales, perhaps the two most obvious limitations was the relatively short campaign exposure period (two weeks) and the constricted number and nature of campaign sites. Finally ambient media should not be seen as creating a message in itself, but rather contextualised within a broader campaign design (Donovan & Henley 1997; Maibach & Cotton 1995; Flay 1990).

Future research

Future research could therefore explore integrating ambient media with other media tools. Future research is also needed to more closely examine barriers to compliance including cognitive protective mechanisms in message recipients and self efficacy perceptions (Bandura 1977). The degree to which the amelioration of barriers increases proactive behaviour is a key element in relation to HIV/AIDS prevention messages. Finally, the apparent positive response to the use of reflective surfaces in the current ambient media campaign warrant further investigation. Such

research should examine whether it is the graphic properties rather than the actual message content that affects level of personalisation.

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Figure 2. HIV/AIDS Ambient Media, Bar and Café Washroom Poster

Headline : “I can get it, I can prevent it”

Saya bisa kena, saya bisa cegah!

Image: Frosted mirror surface reflecting readers facial features.

Body Text - AIDS is spread through sex with someone

Infected with the virus (HIV) or sharing needles for drug use.

It is impossible to tell who has the virus just by looking

[at him/her]. Use a condom if you have needles for drug use.

AIDS ditularkan lewat hubungan seks dengan seorang

pengidap virusnya (HIV), dan penggunaan jarum narkoba

bersama. Mustahil menentukan seseorang mengidap virusnya hanya dengan memandangnya.

Gunakan kondom jika berhubungan seks. Jangan pakai jarum narkoba bersama.

Brand and Strapline – AIDS - Anyone can get it: We can all prevent it.

AIDS - Kita bisa kena: kita juga bisa cegah.





Figure 3. The ambient media posters in situ in men's washroom above urinals in one of the intervention bars located in downtown Jakarta.

Table 1. *Participant numbers by group.*

	Total	Female	Male
<i>Intervention Group</i>			
Bar <i>n</i> (%)	134	64(37.9)	70(42.9)
Café <i>n</i> (%)	32	18(10.7)	14(8.6)
<i>Comparison Group</i>			
Bar <i>n</i> (%)	70	44(26.0)	26(16.0)
Café <i>n</i> (%)	96	43(25.4)	53(32.5)

Table 2. Knowledge about HIV/AIDS sources of transmission by group

	Intervention			Control			Chi-square	p value
	<i>n</i>	%	Adj Res [‡]	<i>n</i>	%	Adj Res [‡]		
Knowledge about HIV/AIDS [☒]	166	100	–	166	100	–	Not computed	–
Unprotected sex							$\chi^2(1) = 3.277$	.070
Yes	125	75.3	1.8	110	66.3	-1.8		
Vector not specified	41	24.7	-1.8	56	33.7	1.8		
Sharing needles, when taking drugs							$\chi^2(1) = 2.632$	.105
Yes	129	77.7	1.6	116	69.9	-1.6		
Vector not specified	37	22.3	-1.6	50	30.1	1.6		
HIV infected blood transfusions							$\chi^2(1) = 7.325$	.007
Yes	29	36.7	-2.7	50	30.1	2.7		
Vector not specified	137	82.5	2.7	116	69.9	-2.7		
Breastfeeding							$\chi^2(1) = 1.650$	.199
Yes	7	4.2	1.3	3	1.8	-1.3		
Vector not specified	159	95.8	-1.3	163	98.2	1.3		
Kissing a person infected with AIDS							$\chi^2(1) = 1.028$	.502 [†]
Yes	3	1.8	-1.0	6	3.6	1.0		
Vector not specified	163	98.2	1.0	160	96.4	-1.0		
Sitting on a toilet seat/using a toilet used by a person infected with AIDS							$\chi^2(1) = 0.146$	1.000 [†]
Yes	3	1.8	-0.4	4	2.4	0.4		
Vector not specified	163	98.2	0.4	162	97.6	-0.4		

Category sums do not always equal column totals because of missing data for some items.

☒ Control group responses based on combined responses to Q2 + 3 of their questionnaire.

† Exact option

‡ An adjusted residual greater than 1.96 was indicative of a significant deviation from independence (Agresti & Finlay 1997)

Table 3. *Intended target audience for AIDS messages by group*

	Intervention N=166			Control N=166			Chi-square	p value
	<i>n</i>	%	Adj Res [‡]	<i>n</i>	%	Adj Res [‡]		
People like me							$\chi^2(1)=0.338$	.561
Yes	53	31.9	-0.6	58	34.9	0.6		
No response specified	113	68.1	0.6	108	65.1	-0.6		
People who multiple sexual partners							$\chi^2(1)=0.215$	.643
Yes	26	15.7	0.5	23	13.9	-0.5		
No response specified	140	84.3	-0.5	143	86.1	0.5		
People not using condoms							$\chi^2(1)=0.000$	1.000
Yes	27	16.3	0.0	27	16.3	0.0		
No response specified	139	41.9	0.0	139	41.9	0.0		
People using commercial sex workers							$\chi^2(1)=1.036$	.309
Yes	45	27.1	1.0	37	22.3	-1.0		
No response specified	121	72.9	-1.0	129	77.7	1.0		
Commercial sex workers							$\chi^2(1)=0.216$	.642
Yes	58	34.9	0.5	54	32.5	-0.5		
No response specified	108	65.1	-0.5	112	67.5	0.5		
People who take/inject drugs							$\chi^2(1)=7.429$	.006
Yes	14	8.4	-2.7	31	18.7	2.7		
No response specified	152	91.6	2.7	135	81.3	-2.7		

Category sums do not always equal column totals because of missing data for some items.

[‡]An adjusted residual greater than 1.96 was indicative of a significant deviation from independence (Agresti & Finlay 1997)

Table 4. *Logistic regression analysis of personal relevance of AIDS messages- all respondents*

Variables	B	SE	Wald	df	p value	Exp(B)	95.0% C.I. for EXP(B) lower - upper	
AIDS messages are not relevant to me or my friends.	-0.095	.124	0.580	1	.446	0.910	0.713	1.161
AIDS messages have had a strong impact on me and made me want to change my lifestyle.	0.404	.155	6.808	1	.009	1.497	1.106	2.028
AIDS messages have told me lots of things I don't know about AIDS.	-0.083	.141	0.346	1	.557	0.920	0.697	1.214
I can reduce my chances of AIDS infection by not injecting drugs.	-0.955	.244	15.278	1	.000	0.385	0.238	.621
I now see that, even I, could be at risk of AIDS.	1.170	.245	22.759	1	.000	3.221	1.992	5.208
I want to find out more about HIV/AIDS.	-0.126	.157	0.648	1	.421	0.881	0.648	1.198
I intend to use condoms every time I have sex to prevent getting AIDS.	0.443	.170	6.744	1	.009	1.557	1.115	2.174

Table 5. *Logistic regression analysis of personal relevance of AIDS messages - High risk respondents only*

Variables	<i>B</i>	SE	Wald	df	p value	Exp(<i>B</i>)	95.0% C.I. for EXP(<i>B</i>) lower - upper	
AIDS messages are not relevant to me or my friends	0.125	.263	0.225	1	.635	1.133	0.677	1.898
AIDS messages have had a strong impact on me and made me want to change my lifestyle.	0.483	.320	2.278	1	.131	1.621	0.866	3.035
AIDS messages have told me lots of things I don't know about AIDS	-0.081	.227	0.129	1	.720	0.922	0.591	1.437
I can reduce my chances of AIDS infection by not injecting drugs.	-0.629	.453	1.931	1	.165	0.533	0.219	1.295
I now see that, even I could be at risk of AIDS	1.592	.603	6.972	1	.008	4.915	1.507	16.024
I want to find out more about HIV/ AIDS	0.292	.335	0.759	1	.384	1.339	0.694	2.582
I intend to use condoms every time I have sex to prevent getting AIDS	-0.287	.457	0.395	1	.530	0.750	0.306	1.837

Table 6. Personal intentions with respect to AIDS prevention by group

	Intervention			Control			Chi-square	p value
	n	%	Adj Res [‡]	n	%	Adj Res [‡]		
Abstain from sex							$\chi^2(1)=1.735$	.188
Yes	78	47.0	-1.3	90	54.2	1.3		
No response specified	88	53.0	1.3	76	45.8	-1.3		
Be faithful to one partner							$\chi^2(1)=3.088$	.079
Yes	88	53.0	1.8	72	43.4	-1.8		
No response specified	78	47.0	-1.8	94	56.6	1.8		
Wear a condom							$\chi^2(1)=5.086$	.024
Yes	74	44.6	2.3	54	32.5	-2.3		
No response specified	92	55.4	-2.3	112	67.5	2.3		
Follow the teachings of my faith							$\chi^2(1)=0.180$	.672
Yes	13	7.8	0.4	11	6.6	-0.4		
No response specified	153	92.2	-0.4	155	93.4	0.4		
Talk to my family/ relatives/ friends about AIDS							$\chi^2(1)=0.114$	1.000*
Yes	5	3.0	0.3	4	2.4	-0.3		
No response specified	161	97.0	-0.3	162	97.6	0.3		
Seek out further information on AIDS							$\chi^2(1)=0.841$	.359
Yes	14	8.4	-0.9	19	11.4	0.9		
No response specified	152	91.6	0.9	147	88.6	-0.9		
Warn people who may be at risk of AIDS							$\chi^2(1)=1.313$	448*
Yes	5	3.0	1.1	2	1.2	-1.1		
No response specified	161	97.0	-1.1	164	98.8	1.1		
Change my behaviour (sex practices, condom use)							$\chi^2(1)=2.496$	.114
Yes	18	10.8	1.6	10	6.0	-1.6		
No response specified	148	89.2	-1.6	156	94.0	1.6		
Change my drug taking practices (Injecting drugs, sharing needles)							$\chi^2(1)=0.467$	.494
Yes	31	18.7	-0.7	36	21.7	0.7		
No response specified	135	81.3	0.7	130	78.3	-0.7		
Take care not to share needles in other ways (tattooing, initiation)							$\chi^2(1)=1.507$	.220
Yes	29	17.5	1.2	21	12.7	-1.2		
No response specified	137	82.5	-1.2	145	87.3	1.2		

Category sums do not always equal column totals because of missing data for some items.

*Exact option

‡ An adjusted residual greater than 1.96 was indicative of a significant deviation from independence (Agresti & Finlay 1997)

Appendix 1. Demographic Characteristics of Respondents by Group

	Intervention			Control			Chi-square	p value
	<i>n</i>	%	Adj Res	<i>n</i>	%	Adj Res		
Gender							$\chi^2(1)=0.301$	.583
Male	84	50.6	0.5	79	47.6	-.5		
Female	82	49.4	-0.5	87	52.4	.5		
Relationship status							$\chi^2(1)=1.210$	.271
Married	37	22.3	1.1	29	17.5	-1.1		
Not married	129	77.7	-1.1	137	82.5	1.1		
Education							$\chi^2(4)=0.204$	.022[†]
No formal schooling	0	–		0	–			
Elementary – not completed	2	1.2	1.4	0	–	-1.4		
Elementary – finished	3	1.8	1.7	0	–	-1.7		
Junior high school	12	7.2	1.2	7	4.2	-1.2		
Senior high school	90	54.2	1.2	79	47.6	-1.2		
University / Academy	59	35.5	-2.3	80	48.2	2.3		
Employment status							$\chi^2(3)=9.479$	<.001[†]
Working	115	69.3	1.6	101	60.8	-1.6		
Housewife	5	3.0	.7	3	1.8	-.7		
Student	24	14.5	-3.9	54	32.5	3.9		
None/Looking for a job	22	13.3	2.7	8	4.8	-2.7		
Total household income–Rp							$\chi^2(4)=0.400$	.030[†]
A1: Over 1,500,000	94	58.0	-2.1	114	69.1	2.1		
A2: 1,000,001–1,500,000	33	20.4	0.8	28	17.0	-.8		
B: 700,001–1,000,000	19	11.7	0.2	18	10.9	-.2		
C1: 500,001–7,000,000	13	8.0	2.9	2	1.2	-2.9		
C2: 350,001– 500,000	3	1.9	0.0	3	1.8	.0		
D: 250,001– 350,000	0	–		0	–			
≤ 250,000	0	–		0	–			
Consumed alcohol prior to interview								
Yes	39	23.5	-1.9	55	33.1	1.9	$\chi^2(1)=3.799$	.051
No	127	76.5	1.9	111	66.9	-1.9		
<i>Activities undertaken in past month</i>								
Attended mosque/church							$\chi^2(1)=1.739$	.187
Yes	124	74.7	-1.3	134	80.7	1.3		
Not stated	42	25.3	1.3	32	19.3	-1.3		

Category sums do not always equal column totals because of missing data for some items.

[†]Exact option

Appendix 2. Screening items used to categorise respondents as high-risk for HIV/AIDS by group

	Intervention N=42			Control N=43			Chi-square	p value
	<i>n</i>	<i>%</i>	Adj Res	<i>n</i>	<i>%</i>	Adj Res		
> 1 sexual partner in last 3 months							$\chi^2(1)=1.078$	.299
Yes	53	31.9	-1.0	62	37.3	1.0		
No	113	68.1	1.0	104	62.7	-1.0		
Sexual relations with a sex worker (female/ male/ transsexual)							$\chi^2(1)=4.868$	.027
Yes	16	9.6	2.2	6	3.6	-2.2		
No	150	90.4	-2.2	160	96.4	2.2		
Homosexual sex							$\chi^2(1)=14.886$	<.001
Yes	25	29.8	3.9	5	6.3	-3.9		
No	59	70.2	-3.9	74	93.7	3.9		
Drug use								
Injecting drug users	4	2.4	0.8	2	1.2	-0.8	$\chi^2(2)=0.794$	.721 [†]
Non-injecting drug users	35	21.1	-0.4	38	22.9	0.4		
Non-users of drugs	127	76.5	0.1	126	75.9	-0.1		

Category sums do not always equal column totals because of missing data for some items.

[†]Exact option

Appendix 3. *High-risk respondents' perceptions of intended target audience for AIDS messages by group*

	Intervention-High risk N=42			Control-High risk N=43			Chi-square	p value
	<i>n</i>	%	Adj Res [‡]	<i>n</i>	%	Adj Res [‡]		
People like me							$\chi^2(1)=0.616$	.432
Yes	26	61.9	.8	23	53.5	-.8		
No response specified	16	38.1	-.8	20	46.5	.8		
People who multiple sexual partners							$\chi^2(1)=1.023$	.312
Yes	7	16.7	1.0	4	9.3	-1.0		
No response specified	35	83.3	-1.0	39	90.7	1.0		
People who have sex without condoms							$\chi^2(1)=1.119$	.290
Yes	6	14.3	-1.1	10	23.3	1.1		
No response specified								
People using commercial sex workers							$\chi^2(1)=1.483$	.223
Yes	9	21.4	1.2	5	11.6	-1.2		
No response specified								
Commercial sex workers								.422
Yes	6	14.3	-.8	9	20.9	.8	$\chi^2(1)=0.645$	
No response specified								
People who take/inject drugs							$\chi^2(1)=3.922$	.048
Yes	2	4.8	-2.0	8	18.6	2.0		
No response specified	40	95.2	2.0	35	81.4	-2.0		

Category sums do not always equal column totals because of missing data for some items.

[‡]An adjusted residual greater than 1.96 was indicative of a significant deviation from independence (Agresti & Finlay 1997)

Appendix 4. *Glossary of terms and acronyms used*

Education and Communication	IEC
Human Immuno Deficiency Virus	HIV
World Health Organization	WHO
Sexually Transmitted Disease	(STD)
Information Education and Communication	(IEC)
Behavior Change Communication	(BCC)
Interpersonal Communication	(IPC)
Commercial Sex Workers	(CSW)
