Attitudes, Behaviors and Beliefs of Urban Adult Filipinos on Sunlight Exposure: A Qualitative Study*

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Abstract

Objective. To explore the attitudes, behaviors, and beliefs of urban adult Filipinos on sunlight exposure as an initial step in the development and validation of a culturally-appropriate questionnaire.

Methodology. Focus groups were conducted among urban Filipinos 19 years old and above (n=38). The transcribed results underwent qualitative content and thematic analyses and were used to develop a conceptual framework.

Results. Qualitative analysis revealed four main themes of sunlight exposure: internal influences, external influences, perceived benefits, and perceived risks. Both internal and external influences lead to perceived risks and benefits. Consequently, the perceived benefits (or lack) of sunlight exposure influence an individual’s attitude towards vitamin D supplementation; whereas the perceived risks of sunlight exposure influence an individual’s attitude towards the need for sun protection.

Conclusion. The attitudes, behaviors and beliefs of urban adult Filipinos on sunlight exposure are influenced by both internal and external factors, that in turn lead to perceived risks and benefits. An increased awareness of these factors is necessary to establish future recommendations on proper sunlight exposure in this population. The study results will be used to develop and validate a culturally-appropriate sunlight exposure questionnaire.

Key words: sunlight exposure, adult Filipinos, urban health, community health, qualitative research

INTRODUCTION

Vitamin D deficiency (VDD) affects around one billion people globally.¹ It is reflected by low levels of serum 25-hydroxyvitamin D (25-OHD), leading to calcium and phosphate imbalance, bone mineral loss and significant fracture risk. Efforts to address VDD initially focused on temperate countries where serum 25-OHD levels fluctuate to suboptimal ranges during winter and early spring.²³ However, there is a growing focus of concern in tropical countries, which were believed to receive adequate year-round sunlight exposure and are thus previously considered unlikely to harbor VDD. In the Philippines, a study on urban postmenopausal women revealed 36% of the subjects as having inadequate 25-OHD levels.⁴

Ultraviolet ray (UVB) exposure is the main source of Vitamin D in humans.⁵ It is assessed by different methods such as observation, skin reflectance with colorimeters, skin swabbing with spectrophotometers, dosimetry with polysulfone films, sunlight diaries and mole inspection. However, these procedures are either not readily available or expensive, or prone to inter-observer variability.⁶ In population-based studies, questionnaires remain the most cost-effective way of measuring sunlight exposure.⁷ Although no universally-validated version is available for routine use to quantify sunlight exposure, several questionnaires have been formulated and validated in different countries. Of these, only 2 were validated in Asian populations (Hong Kong and Pakistan), and only 3 were done in the context of VDD by correlating questionnaire results with serum 25-OHD.⁷⁻¹⁰

Currently, there is no existing sunlight exposure questionnaire validated for use in tropical countries such as the Philippines. This study used focus group...
The study included individuals 19 years old or older, who are able to speak and understand the Filipino (Tagalog) language, and who are either living in or working at least 5 days a week in Metro Manila for at least the past 5 years. The FGDs were conducted separately with 5 groups: Group 1, working age (19-60 years old) males with some education and outdoor work; Group 2, working age females with some education and outdoor work; Group 3, working age male physicians with indoor work; Group 4, working age female physicians with indoor work; and Group 5, elderly (60 years and older) individuals. Seven to 8 participants were recruited for each FGD, the recommended number in literature. The participants were recruited from the Philippine General Hospital by two study investigators (MGY and ABU). Table 1 shows the summary profile of the FGD participants.

All FGDs were conducted in Filipino (Tagalog) and took place in a quiet room with a facilitator (MGY) and a note-taker (ABU) who did both manual transcription and digital audiotaping of the sessions. Written informed consent was obtained from all participants. Each session commenced with the facilitator first explaining the purpose and outline of the FGD, after which the participants were asked to introduce themselves. The guide questions were formulated by a panel of three endocrinologists, two dermatologists, a health social scientist, an internist and a community medicine physician. These were constructed in a semi-structured, open-ended format (Table 2). Each participant was given a chance to speak, and both verbal and non-verbal responses were noted. The FGDs concluded with the facilitator summarizing the discussion.

The accuracy of the manual transcripts was verified and cross-checked with the digital audio recordings. The transcribed responses of the participants then underwent qualitative content analysis with quotations being listed anonymously. Both manifest and latent analysis of content data were done. Manifest analysis was first performed by identifying key themes and concepts in the transcripts, after which latent analysis was performed by putting data into categories, with relationships being generated and modified. Emerging themes and sub-themes were further identified by clustering the different categories. The integration of data was based on words, context, frequency, intensity and extensiveness of comments, and specificity of responses. The analyzed FGD results were reviewed by the panel and were used to develop a conceptual framework. The version approved by the majority of the panel (50% + 1, or at least 5 members) was accepted as the final conceptual framework (Figure 1). All qualitative analyses were performed manually.

**Ethical Considerations**

The protocol was approved by the University of the Philippines Manila Research Ethics Board (UPMREB) prior to study commencement. A monetary incentive was provided to all participants as token honorarium.

**RESULTS**

The 5 FGDs included 38 participants. Each session lasted from 60 to 80 minutes, with the participants being generally cooperative. Females were observed to be more responsive than males; Group 5 participants (elderly) were noted to be the most responsive among all groups while discussions (FGDs) to explore the attitudes, behaviors and beliefs of urban adult Filipinos on sunlight exposure as an initial step towards the development and validation of a culturally-appropriate sunlight exposure questionnaire.
Group 1 participants (outdoor males) were relatively more reserved. Those who attained higher levels of education (Groups 3 and 4) were more open in discussing their opinions. In terms of nonverbal responses, the female and elderly participants used more hand and arm gestures and eye contact while speaking compared to the male participants who were more soft-spoken.

The results of the FGDs are listed below using representative quotes to illustrate the way in which individuals participated in the discussions. Qualitative analysis revealed 4 key themes, each with 4 to 5 sub-themes (Table 3).

**Table 3. Themes and sub-themes in the FGD**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Subtheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal influences on sunlight exposure</td>
<td>Fitzpatrick skin classification. Amount of skin exposed to the sun, Travel to/from work, Hobbies.</td>
</tr>
<tr>
<td>External influences on sunlight exposure</td>
<td>Time of the day exposed to sunlight. Day of the week exposed to sunlight. Weather conditions.</td>
</tr>
<tr>
<td>Benefits of sunlight exposure</td>
<td>Biological benefits, Psychological benefits, Aesthetic benefits. Vitamin D supplementation.</td>
</tr>
<tr>
<td>Risks of sunlight exposure</td>
<td>Dermatological risks, Cardiovascular risks, Psychological risks, Sun protection methods.</td>
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**Internal influences on sunlight exposure**

**Fitzpatrick skin type.** Answers regarding skin type were elicited using the phrase “kapag ang balat ay naaarawan” (“when the skin is exposed to the sun”). These roughly corresponded to the Fitzpatrick skin phototype classification, which categorizes the response of different skin types to UV light. The participants appeared to possess four Fitzpatrick skin types: Majority had Type IV (“sometimes burn, always tan”) and Type VI (“never burn, always tan”) skin types, while a few had Type I (“always burn, never tan”) and Type III (“sometimes burn, sometimes tan”) skin types.

**Amount of skin exposed to the sun.** When going out in the sun, males preferred short-sleeved shirts and either shorts or long pants while females preferred either sleeveless tops or short-sleeved shirts and either skirts or long pants. Thus, the face, neck, arms, and sometimes the legs were usually exposed. Some participants believed that this depended on the prescribed work attire.

“Sa kumpanya namin, bawal magtrabaho sa konstruksyon kapag hindi nakasuot ang long sleeves, bota, at helmet.” (“In our company, it is forbidden to work at the construction site when not wearing long sleeves, boots, and a helmet.”) (Male, Outdoor No. 3)

**Occupation.** A significant difference was seen in the duration of sunlight exposure between the outdoor (Groups 1 and 2) and the indoor and elderly (Groups 3, 4 and 5) participants. The former spent 30 minutes or more to five hours each day exposed to the sun due to the nature of their work. The latter spent as little as 5 minutes each day exposed to the sun and attributed their limited sunlight exposure merely to travel to/from work and errands, respectively.

“Dahil sa trabaho ko bilang repairman sa kumpanya ng telepono, nakabilad ako sa ilalim ng init nang halos buong araw.” (“Because of my work as a telephone company repairman, I am exposed under the heat for almost the entire day.”) (Male, Outdoor No. 1)
Travel to/from work. Travel to work was considered a positive influence on sunlight exposure as most participants walked to work early in the morning and walked back home during late afternoon. Public transport was also perceived to allow more sunlight exposure than private transport.

“Pag nag-aantay ka ng jeep, nakabilad ka sa araw. Ganun din kapag sasakay ka ng LRT. Ang haba kasi ng pila.” (When you are waiting for a jeepney, you are exposed to the sun. The same is true when you are taking the LRT [light rail transit]. The line is so long.”) (Male, Indoor No. 4)

Hobbies. Most participants preferred indoor activities such as shopping, watching television, and surfing the internet, making these a negative influence on sunlight exposure. Only a few engaged in outdoor hobbies such as jogging and outdoor sports.

External influences on sunlight exposure

Time and day of sunlight exposure. For all groups, sunlight exposure took place predominantly during early morning. For the working groups (Groups 1, 2, 3 and 4), this was due to travel from home to work. For the elderly group, this was due to daily activities such as going to the market and bringing grandchildren to school. Most participants reported no significant difference in sunlight exposure between weekdays and weekends.

“Mga 7:00 ng umaga, lumalabas ako para ilhatid ang mga apo ko sa paaralan at mamamalengke pagkatapos noon.” (“Around 7:00 in the morning, I go out to bring my grandchildren to school and then proceed to the market after.”) (Elderly No. 1)

Family, friends, and coworkers. The influence of family, friends, and coworkers on sunlight exposure was overwhelmingly negative, with most participants being advised to avoid the sun due to its harmful effects. A recurring theme was the risk of getting darker complexion in the female groups (Groups 2 and 4).

“Sabi ng nanay ko, hawag daw magpaparaw dahil nakakaitim. Dapat panatilihin maputik ang kutis kapag babae.” (“My mother said, don’t get exposed to the sun because it causes darker skin. You need to maintain a fair complexion if you are female.”) (Female, Indoor No. 2)

The elderly participants stated that sunlight exposure was heavily dependent on the type of activities they accompanied their younger family members to.

“Depende sa gustong gawin ng mga anak at apo ko. Kung gusto nila magpaparaw, susana ako. Kung gusto nila pumunta sa mall, susana din ako.” (It depends on what my children and grandchildren want to do. If they want to go out in the sun, I would go with them. If they want to go to the mall, I would also go with them.”) (Elderly No. 3)

Mass media. The influence of mass media on sunlight exposure was similarly negative. The participants believed that this is significant in Philippine society where fair skin is valued.

(Verbatim in English): “They always advertise whitening products on TV. That’s why no one goes out in the sun anymore.” (Male, Indoor No. 1)

Weather. Most participants were willing to be out in the sun more during cloudy weather as opposed to extremely sunny weather, as they tried to avoid the heat.

“Mas maaliwalas kapag maulap. Ayokong lumabas kapag masyadong maaraaw.” (“It’s more comfortable when it’s cloudy. I don’t want to go out when it’s too sunny.”) (Female, Outdoor No. 5)

Perceived benefits of sunlight exposure

The perceived benefits of sunlight exposure fell under three categories: biological, psychological and aesthetic.

Biological benefits. For the participants, the purported biological benefits of sunlight exposure included favorable effects on bone health and faster recovery from illness. Conversely, many of them believed that lack of sunlight exposure is a detriment to the immune system and makes one sicker.

“Kapag hindi ka nagpaparaw, lalo kang madaling kapitan ng ubo’t sipon.” (“When you don’t get exposed to the sun, you’ll be more prone to cough and colds.”) (Elderly No. 6)

Psychological benefits. The psychological benefits of sunlight exposure included feeling happier and livelier. Some participants believed that this is due to increased physical activity when one is outdoors.

“Pakiramdam ko mas nagging malungkot at matamlay ako kapag hindi naaraawan.” (“I feel more sad and lethargic when I do not go out in the sun.”) (Male, Outdoor No. 7)

Aesthetic benefits. The aesthetic benefits of sunlight exposure included getting a rosier complexion, which the participants attributed to improved circulation. Some participants with skin types that tan also believed tanning exposed them to perceived risks and benefits. Perceived benefits were

“Hindi ako uminom ng supplement kung hindi naman kailangan. Maaari pa itong magdulot ng ‘di magandang epiko sa katawan.” (“I don’t take supplements if these are not necessary. They can
Perceived risks of sunlight exposure

Similar to the perceived benefits, the perceived risks of too much sunlight exposure can also be classified under biological and psychological categories. However, the biological risks clearly fell under two sub-categories: dermatological and cardiovascular.

Dermatological risks. Most of the participants were familiar with and used English terms for the different dermatological conditions caused by too much sunlight exposure, such as “sunburn,” “skin cancer,” and “skin allergy.” The exceptions were prickly heat rash (termed “bungang-araw”) and photoaging (termed “pangungulubot ng mukha” or “wrinkling of the face” by the participants.)

Cardiovascular risks. The cardiovascular risks of too much sunlight exposure included hypertension, dizziness and heat stroke. Some participants believed that this is caused by unfavorable changes in the body’s circulatory system.

“I feel uncomfortable when I am sweaty. I also develop low self-esteem when I get darker skin because in the Philippines, you can get bullied for that.” (Female, Indoor No. 7)

Psychological risks. The psychological risks of too much sunlight exposure included discomfort from sweating and fear of getting darker skin. These were especially emphasized in the indoor female group (Group 4).

“Hindi ako gumagamit ng sunblock. Di ba panghabae lang ‘yun?” (“I don’t use sunblock. Isn’t it only for girls?”) (Male, Outdoor No. 4)

Sun protection methods. The participants utilized different methods of sun protection. The use of caps and hats was a common feature of outdoor males. This group was also the only one not using sunscreen, as many thought these were only for women. Umbrella use, meanwhile, was found in most females. Active shade-seeking was a common feature of the outdoor groups due to the nature of their work. Shades or sunglasses were the least commonly-employed form of sun protection and were mostly worn for fashion purposes instead.

Conceptual framework

The end result of the FGDs was a conceptual framework explaining the attitudes, behaviors, and beliefs of urban adult Filipinos on sunlight exposure (Figure 1). In general, sunlight exposure in urban adult Filipinos was influenced primarily by two main factors: internal and external. Internal factors included the Fitzpatrick skin type, amount of body parts exposed to sunlight, type of occupation, travel to/from work and hobbies. External factors included the time of the day and day of the week exposed to sunlight, weather conditions, mass media, and the influence of other people such as family, friends and colleagues. Both internal and external factors, in turn, led to perceived risks and benefits. Perceived benefits were biological, psychological or aesthetic; whereas perceived risks were dermatological, cardiovascular or psychological. The perceived benefits (or lack of) of sunlight exposure influenced an individual’s attitudes towards Vitamin D supplementation, whereas the perceived risks of sunlight exposure influenced an individual’s attitudes towards the need for sun protection.

DISCUSSION

In this study, we explored the attitudes, behaviors, and beliefs of urban adult Filipinos on sunlight exposure. Our study is unique in so far as no other qualitative research has been conducted in a similar setting and population to investigate concepts and notions about sunlight exposure. Urban residents were prioritized as air pollutants in cities absorb UVB, thus reducing the amount that reaches the earth’s surface.14 This may partly explain the lower serum 25-OHD levels consistently found in urban populations across Asia.15,16

The first theme involved internal influences on sunlight exposure in the participants, which are factors usually inherent to the individual. In terms of Fitzpatrick skin type, the participants’ responses conformed to the general perception of Southeast Asian people being darker-skinned compared to Caucasians. Since melanin is known to absorb UVB, the former may require a greater degree of sunlight exposure to synthesize a comparable amount of Vitamin D.17 Indoor occupations and hobbies negatively impacted sunlight exposure, while public transport positively impacted sunlight exposure. The influence of public transport was striking given the generally perceived lack of transport infrastructure in the Philippines.18

The second theme involved external influences on sunlight exposure, which are extrinsic to or non-modifiable by the individual. The relative constancy of the participants’ sunlight exposure duration, regardless of day of the week or month of the year, conformed to the flat seasonal profile of tropical countries, in contrast to temperate countries with distinct seasons and climates. Family and friends, mass media and sunny weather negatively impacted...
sunlight exposure, while cloudy weather positively affected sunlight exposure. The significant influence of family attested to the strong kinship and social ties of Filipinos. The considerable influence of mass media, on the other hand, can be explained by urban residents having better access to technology compared to their rural counterparts.

The third theme involved the perceived benefits of sunlight exposure. These were grouped into three main categories: biological, psychological and aesthetic. One observation was the lack of a local term equivalent for sunscreen. Another was the absence of a pretest of the focus group instrument prior to the actual FGDs. One limitation of the study was the lack of a pretest of the focus group instrument prior to the actual FGDs. Another was the performance of manifest and latent analyses by only one investigator, although the final analyzed results were reviewed, revised and eventually approved by the entire panel. Due to health reasons and logistic difficulties, we were also unable to recruit very elderly (above 70 years old) participants, one of the groups most at risk for VDD. Since serum 25-OHD levels were not tested prior to the FGDs, we were likewise unable to determine whether any of the participants had known VDD. Moreover, none of the FGD participants were night shift workers, and we were unable to recruit participants of other religions, such as hijab-wearing female Muslims. According to the National Commission on Muslim Filipinos in 2012, Muslims are estimated to comprise 10.7% of the country’s population.

**CONCLUSION**

The attitudes, behaviors and beliefs of urban adult Filipinos on sunlight exposure are influenced by both internal and external factors that in turn lead to perceived risks and benefits. An increased awareness of these factors is necessary to establish future recommendations on proper sunlight exposure in this population. The study results will be used to develop and validate a culturally-appropriate sunlight exposure questionnaire.

**Statement of Authorship**

All authors certified fulfillment of ICMJE authorship criteria.

**Author Disclosure**

The authors declared no conflict of interest.

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