Journal of Adolescent Health 52 (2013) S76–S82

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

An Intervention to Decrease Adolescent Indoor Tanning: A Multi-Method Pilot Study

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Article history: Received May 3, 2012; Accepted August 28, 2012
Keywords: Indoor tanning; Interventions; Melanoma; Adolescents; Health communication

A B S T R A C T

Purpose: Indoor tanning usually begins during adolescence, but few strategies exist to discourage adolescent use. We developed and tested a parent–teenager intervention to decrease indoor tanning use.

Methods: Through focus groups, we identified key messages to enhance parent–teenager communication about indoor tanning, and then developed a pamphlet for parents and postcards for adolescents to use in a direct mail experiment with randomly selected households. Two weeks after the mailing, we asked intervention parents (n = 87) and adolescents (n = 69) and nonintervention parents (n = 31) and adolescents (n = 28) about intervention receipt and content recall, parental concern, monitoring, parent–teenager conversations, and indoor tanning intention.

Results: In intervention households, 54% of mothers and 56% of girls recalled receipt and reported reading materials, but few boys and no fathers did. Among mothers, 57% in intervention households indicated concern about daughters' indoor tanning, and 25% would allow daughters to tan indoors, whereas 43% of nonintervention mothers had concerns and 46% would allow indoor tanning. Fewer girls in intervention households than in nonintervention households thought parents would allow indoor tanning (44% vs. 65%), and fewer intended to tan indoors (36% vs. 60%). Most mothers and daughters who read the intervention materials also reported discussions about indoor tanning. Moreover, the less likely girls were to think that their mothers would allow indoor tanning, the less likely it was that they intended to tan indoors, a relationship mediated by perceptions of maternal monitoring.

Conclusions: A systematic qualitative and quantitative research approach yielded well-received indoor tanning prevention messages for mothers and female adolescents. Enhancing maternal monitoring has potential to decrease adolescent indoor tanning.

IMPLICATIONS AND CONTRIBUTION

Effective strategies are needed to curb indoor tanning by adolescent girls. This study developed and pilot-tested an intervention to enhance mothers' influence over daughters' use of indoor tanning by encouraging informed conversations between mothers and daughters. Preliminary results support this approach, but further evaluation in a randomized controlled trial is needed.

Publication of this article was supported by the Centers for Disease Control and Prevention.
The authors report no potential conflicts of interest.

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Melanoma is one of the fastest increasing cancers in the U.S. and accounts for 75% of all skin cancer deaths [1]. Furthermore, melanoma is the second and third most common cancer among women and men under age 40 years, respectively [2]. Solar ultraviolet radiation is an established risk factor for melanoma [3], and recently, artificial ultraviolet radiation obtained from indoor

1054-139X/$ – see front matter
http://dx.doi.org/10.1016/j.jadohealth.2012.08.009

tanning devices was declared to be carcinogenic to human skin [4]. In particular, use of indoor tanning at a young age is widely believed to confer increased risk of melanoma [5]. This is especially concerning because indoor tanning typically starts during adolescence and is more commonly practiced by younger than older adults [6–8]. Recent studies offer evidence to support two different mechanisms by which early onset of indoor tanning affects melanoma risk. Initiation of the behavior at a young age may increase the cumulative exposure, leading to greater likelihood of melanoma [9,10]. For a subset of persons genetically predisposed to melanoma, earlier use of indoor tanning may accelerate melanoma development and cause it to occur at a younger age [10].

Although 16% of high school students overall and 25% of high school girls report indoor tanning [11], and the median age of initiation among girls is 17 years (interquartile range, 16–18 years) [12], the problem of indoor tanning among adolescents has yet to become an active area for intervention. Altogether, just four intervention studies targeting indoor tanning use, all of college-aged females, have been reported: a pilot study of a 30-minute individual counseling session versus a personalized feedback sheet [13], a pilot study that used ultraviolet photography to show skin damage [14], a pilot study that compared narrative with statistical messages [15], and a randomized controlled trial that tested the efficacy of a booklet that encouraged alternatives to enhance appearance other than indoor tanning [16]. Given the dearth of research on interventions in this area for the adolescent population, we conducted a study that incorporated qualitative and quantitative methods for the purpose of developing an intervention to prevent adolescent indoor tanning. Because parents' indoor tanning has been consistently and strongly predictive of adolescents' indoor tanning [17–20], and family interaction has been identified as an important influence on the health behavior of children and adolescents, including sun protection [21–24], we included both parents and adolescents in the project with the goal of developing an intervention that enhanced family communication on this topic. Here, we present the findings from our research endeavor.

Methods

Overview

As described in detail below, we conducted focus groups with parents and teenagers to inform the content of our parent–teenager indoor tanning intervention, pretested the intervention with parents and teenagers via a semistructured in-depth telephone interview, and pilot-tested the intervention to determine its reach into the target population. We recruited participants from the membership of HealthPartners, a large integrated health system of more than 800,000 residents in the Minneapolis–St. Paul, Minnesota, metropolitan area with similar characteristics to the state as a whole, and from two area suburban high schools. At each stage, parents provided consent for themselves and their adolescents, whereas we asked adolescents for their assent. Institutional Review Boards at the University of Minnesota and HealthPartners approved the study.

Focus groups

From March through June 2008, we conducted six focus groups with adolescents aged 14–16 years, and two with mothers or fathers of adolescents in the 14- to 16-year age range (one of these included parents related to adolescents who also participated in a focus group). We restricted three focus groups for adolescents to girls who tanned indoors (n = 13), one to girls who had not tanned indoors (n = 6), and two to boys regardless of their indoor tanning experience (n = 13; one indoor tanner). Twenty-five adolescents were non-Hispanic white, four were African-American, two were Hispanic, and one was Native American. Among 10 parents (nine female and one male), eight were non-Hispanic white, one was African-American, and one was Hispanic. Parents ranged in age from 46 to 53 years. Of the 10 parents, seven had at least some college education.

We gathered viewpoints regarding knowledge and attitudes about indoor tanning, preferred media for message delivery, barriers to parent–teenager conversations, and parental roles regarding adolescent indoor tanning. We transcribed and analyzed audio recordings from the focus group discussions using a thematic approach [25]. From these data, we derived a set of themes and worked with a graphic designer and science writer to create the intervention materials.

Pretest

After we created draft versions of intervention materials in fall 2008, we sent them to 10 parents of adolescents ages 14–16 years and 10 adolescents of the same age in December 2008 to January 2009. After giving each participant about a week to review, we then conducted in-depth telephone interviews for a detailed assessment of relevance, appearance, and comprehension of the intervention materials.

Pilot test

The pilot test took place in April to June 2009. From 500 randomly selected households that were HealthPartners members with an adolescent (boy or girl) aged 15 or 16 years, and that had not participated in our focus groups or pretest, we randomized 70% to receive the intervention materials and 30% to serve as a comparison group. Before sending the intervention materials, we sent a letter to all households informing the parents that they and their adolescent could be selected for a telephone interview on skin health and behavior, and that they might receive some mailed information on that topic. We planned to interview approximately 100 parents and 100 adolescents (limited to one parent and one adolescent per household) while maintaining the 7:3 ratio of intervention to comparison households to ensure an adequate number of participants from intervention households likely to recall receiving the materials. Telephone interviews were completed by 87 parent–teen dyads, 31 parents only, and 10 adolescents only. Altogether, we interviewed 87 parents and 69 adolescents in intervention households and we interviewed 31 parents and 28 adolescents in nonintervention households (70.7% of eligible households contacted by telephone). The primary purpose of the interview was to determine whether the interviewee recalled receiving the intervention materials, and if so, whether the materials were read. We asked these questions of both intervention and comparison groups to determine the possibility of biased recall. Among those who indicated having read the materials, we assessed the accuracy with which they recalled the content and inquired about their satisfaction with the materials. From all study participants, we also collected information about indoor