



Short communication

Motivating Mexican American adults to share family history with healthcare providers

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ABSTRACT

Family history of metabolic conditions is a primary factor for clinicians to consider when administering preventive care. Sharing this information with healthcare providers proactively is therefore important to individual health outcomes. This brief report seeks to identify factors associated with sharing family history with healthcare providers in individuals of Mexican heritage. Data were obtained from a health education intervention study conducted during 2008–2010, which recruited 497 adult participants from 162 multigenerational households in Houston, Texas to receive family history-based risk feedback generated by Family Healthware™. Households were randomized to receive a pedigree of metabolic conditions or a pedigree coupled with supplementary information about one's personalized risk assessment and behavioral recommendations. Participants completed two follow-up surveys at three and ten months post intervention, respectively. Analysis based on 296 participants from 147 households who read but did not share their feedback at three-month follow-up suggests benefits of providing personalized risk assessment and tailored behavioral recommendations in addition to a simple pedigree. Participants receiving supplementary risk feedback are more likely to share it with family members at three-month follow-up, which is associated with increased sharing and willingness to share risk feedback with healthcare providers at ten-month follow-up. The findings highlight the importance of family relationships in medical information disclosure in Mexican American adults. Future interventions should capitalize on family relationships in health education and promotion programs for optimal prevention of metabolic conditions in at-risk populations.

1. Introduction

Family health history of metabolic conditions (e.g., heart disease and type 2 diabetes) indicates an individual's personalized risk for developing these conditions. (Scheuner et al., 1997) Practitioners rely on family history to administer effective preventive care. (Carmona and Wattendorf, 2005) In clinical settings, individuals are often in control over how much they are willing to share with healthcare providers. (Agaku et al., 2014; Levy et al., 2018) While some share proactively, others may not know their complete family history (Goergen et al., 2016) or its importance for providers. (Gordon et al., 2012; Walter and Emery, 2005) Low health literacy (Wang et al., 2011) and fear of the social stigma associated with metabolic conditions (Tak-Ying Shiu et al., 2003) can also prevent individuals from sharing family history.

Our prior work, Project Risk Assessment for Mexican Americans (RAMA), has shown that compared to a simple pedigree, in-depth feedback about one's personalized risk for developing metabolic conditions increases willingness to share family history with healthcare providers in a sample of Mexican American adults. (Koehly et al., 2011) This brief report utilizes the follow-up interviews in Project RAMA, seeking to identify factors associated with sharing family history with healthcare providers the year following receipt of risk feedback. We focus on individuals who did not immediately share feedback with providers and hypothesize that interpersonal communication with family members about risk for metabolic conditions is an antecedent of sharing family history with practitioners, given the primacy of family relationships in determining health behaviors among Mexican Americans. (Behnke et al., 2008; Mulvaney-Day et al., 2007; Calzada et al.,

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2. Methods

2.1. Procedure

Project RAMA is a household-based health education intervention study that recruited from the Mano a Mano cohort 162 households (497 adult participants) of Mexican heritage in Houston, Texas. (Koehly et al., 2011) During in-home visits in 2008, a pair of bilingual interviewers collected baseline demographic and health information and the participants' self-reported family history of metabolic conditions (heart disease, type 2 diabetes, high cholesterol and high blood pressure) using structured questionnaires. We input each participant's family history into the Center for Disease Control and Prevention's (CDC) Family Healthware™, (O'Neill et al., 2009) tool to obtain (1) a pedigree; (2) a personalized risk assessment; and (3) tailored behavioral recommendations about lifestyle management and preventive screening for metabolic conditions.

Within two weeks of completing the baseline interview, each participant received his/her individual feedback packet in the mail. The households were randomized into four intervention conditions determined by the number of supplementary feedback recipients (all versus one household member) and the content of supplementary feedback (risk assessment only versus risk assessment and behavioral recommendations). (Koehly et al., 2011) Thus all participants received their pedigree and some received supplementary feedback. Two follow-up telephone interviews were conducted three and ten months post intervention, with a 96% retention rate. The Institutional Review Boards of the National Human Genome Research Institute and the University of Texas MD Anderson Cancer Center approved all study materials. Written and verbal consent were obtained prior to study participation.

2.2. Sample and measures

Feedback Sharing. We included in the final analytic sample 296 participants from 147 households who indicated at three-month follow-up that they read but did not share their feedback with healthcare providers (Fig. 1). These participants also indicated if they shared the feedback with a family member at three-month follow-up (=1, else = 0). A categorical variable was constructed to indicate whether the participant at ten-month follow-up shared feedback with healthcare providers

(=1), did not share but was willing to share with healthcare providers (=2), or would not share (=0, reference category). We combined "Don't Know" with not sharing due to small sample size.

Feedback Content. Three dichotomized variables indicated the content of the feedback participants received at baseline: pedigree only (=1, else = 0; reference group); pedigree and personalized risk assessment (=1, else = 0; hereafter risk assessment); and pedigree, personalized risk assessment and tailored behavioral recommendations (=1, else = 0; hereafter behavioral recommendations).

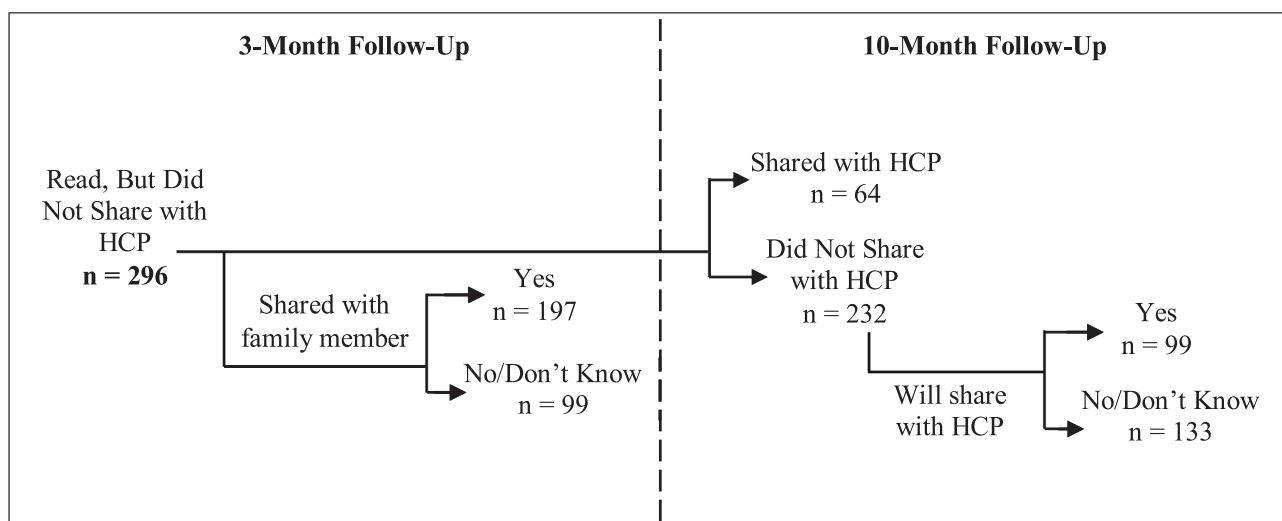
Demographics. We assessed baseline demographics including gender (male = 0, female = 1), parenthood (parent = 1, else = 0), and education (less than high school education = 1, else = 0).

Access to Healthcare. At baseline, participants indicated the status of their health insurance (no insurance = 1, else = 0) and the healthcare provider they normally used (private physician = 1, else [e.g., community clinic, emergency room] = 0).

Health Conditions. Two variables captured the participant's baseline health conditions—a dichotomized variable indicating if the participant was obese (body mass index ≥ 30) and a count of metabolic conditions (heart disease, diabetes, high blood pressure and high cholesterol) the participant had ever been diagnosed.

2.3. Statistical model

A generalized structural equation model was used to estimate effects of feedback conditions on sharing family history with healthcare providers via sharing with family members, as preliminary analysis (not shown) showed a significant direct effect of intervention conditions on the outcome. The first equation estimated, at three-month follow-up, if the participant shared the feedback with a family member with a logit link. Predictors included feedback element, demographics, healthcare access, and health conditions. The second equation estimated whether the participant shared or were willing to share feedback with a healthcare provider at ten-month follow-up with a multinomial link. We included sharing with family at three-month follow-up as an additional predictor to test for a mediation effect—which, if present, would mean that sharing with family members at three-month follow-up fully or partially transmit the intervention effect. Clustering resulted from the household-based recruitment and randomization was accounted for by a Huber/White/sandwich estimator. We calculated the total, direct and indirect effects of intervention conditions on sharing/willing to share feedback with a healthcare provider at ten-month follow-up.



HCP = Healthcare Providers; Risk Assessment for Mexican Americans 2008-2010, Houston TX

Fig. 1. Change in Mexican American Adult's sharing family history with healthcare providers from 3- to 10-month follow-up. HCP = Healthcare providers; risk assessment for Mexican Americans 2008–2010, Houston TX.

3. Results

3.1. Sample characteristics

The average age of the participants in the current analytic sample was 40 years (SD = 15.12) at baseline. About half were female (56%) and 63% were parents. Over half (57%) had less than high school education, 20% had high school and the remaining 22% had more than high school education. At baseline, over a third (37%) indicated no health insurance, 23% had a private physician and nearly half were obese and on average, the participants were affected by one metabolic condition (SD = 1.01).

3.2. The mediating role of sharing feedback with family members

Among participants who read but did not share feedback with healthcare providers at the three-month follow-up, the intervention had a significant effect on their sharing with family members. Participants who received supplementary feedback—risk assessment (OR = 2.17, 95% CI [1.12–4.18]) or behavioral recommendations (OR = 1.93, 95% CI [1.03–3.63])—were about twice more likely to share the feedback with family members, compared to those receiving pedigree only. Sharing feedback with family members at three-month follow-up was associated with a three-fold increase in the likelihood of the participant sharing feedback with healthcare providers (OR = 3.10, 95% CI [1.57–6.12]). It also increased the participant’s willingness to share feedback with healthcare providers at ten-month follow-up by more than two-fold (OR = 2.52, 95% CI [1.38–4.61]). The feedback element had no direct effect on the outcome. However, receiving supplementary feedback had an indirect effect on sharing (risk assessment: OR = 2.39, p = 0.046; behavioral recommendations: OR = 2.82, p = 0.040) or willingness to share (risk assessment: OR = 1.22, p = 0.034; behavioral recommendations: OR = 1.27, p = 0.034) at ten-month follow-up (Table 1).

3.3. Individual characteristics associated with sharing feedback

We observed a greater tendency to share feedback with family

members in participants who were parents (OR = 2.09, 95% CI [1.10–3.97]), but not in women or those with less than high school education. Access to healthcare or the participant’s health status did not affect sharing feedback with family members at three-month follow-up. Women were more likely to shift to sharing or indicate willingness to share feedback with healthcare providers (OR = 2.19 with 95% CI [1.05–4.53] and 2.03 with 95% CI [1.13–3.64], respectively). Participants with more metabolic conditions were more likely to shift from not sharing to sharing with healthcare providers (OR = 1.56, 95% 1.12–2.23]) but comorbidity was not associated with willingness to share with healthcare providers. Parental status, education, access to healthcare and obesity were not associated with the outcome.

4. Discussion

Providing supplementary feedback is effective in motivating individuals who previously did not share family history of metabolic conditions to share such information and potentially seek help from healthcare providers within ten months of feedback receipt. This effect is however indirect, operating through a family relationship pathway. This suggests that Mexican American adults tend to share risk information with family members before they share with their healthcare providers. For individuals to actively engage in sharing family history with healthcare providers, conversations about disease risk need to occur within the family first.

We have found that parents in the households studied are more likely to share their feedback with family members at three-month follow-up. Because of the sampling strategy, most of the parents in our study were born in Mexico, spoke Spanish and had less than high school education. While the literature suggests that both Spanish language and socioeconomic status are barriers to seeking care, (Julliard et al., 2008; Wallace et al., 2008) our results demonstrate Mexican American adults are willing to share family history feedback within families. The parents may be seeking, especially from their adult children, help interpreting the pedigree and suggestions on what actions should be undertaken given such feedback. Therefore, relationship quality and risk communication within the family system are important to an individual’s decision to share family history with an outsider such as healthcare

Table 1

Generalized structural equations estimating Mexican American adult’s sharing family history with healthcare providers: total, indirect and direct effects (n = 296 from 147 households).

	Shared with Family Member ^{3-month}	Shared with Healthcare Provider ^{10-month}	Will Share with Healthcare Provider ^{10-month}
	OR [95% CI]	(Ref.: Will Not Share/Don't Know ^{10-month}) OR [95% CI]	OR [95% CI]
Shared with Family Member ^{3-month}	–	3.10 [1.58–6.12]	2.25 [1.38–4.61]
Feedback Content			
Pedigree	Ref.	Ref.	Ref.
Risk Assessment	2.16 [1.12–4.18]	0.71 [0.29–1.72]	0.90 [0.45–1.82]
Behavioral Recommendations	1.93 [1.03–3.63]	0.53 [0.20–1.36]	0.93 [0.43–2.00]
Parent	2.09 [1.10–3.97]	1.49 [0.65–3.39]	1.66 [0.84–3.29]
Female	1.20 [0.69–2.08]	2.19 [1.05–4.53]	2.03 [1.13–3.64]
< High School	0.84 [0.49–1.44]	1.20 [0.59–2.43]	0.99 [0.56–1.75]
No Insurance	0.91 [0.54–1.55]	0.54 [0.24–1.17]	0.68 [0.37–1.26]
Has Private Physician	0.67 [0.38–1.20]	0.53 [0.22–1.31]	0.81 [0.42–1.55]
Obese	0.97 [0.57–1.68]	1.75 [0.86–3.56]	1.60 [0.88–2.89]
Co-Morbidity	0.89 [0.66–1.18]	1.58 [1.12–2.23]	0.92 [0.65–1.30]
		Shared with Healthcare Provider ^{10-month} (Ref.: Will Not Share/Don't Know ^{10-month}) OR (p-value)	Will Share with Healthcare Provider ^{10-month} OR (p-value)
<i>Direct Effects</i>			
Pedigree		Ref.	Ref.
Risk Assessment		0.89 (0.800)	1.00 (0.995)
Behavioral Recommendations		0.63 (0.348)	0.98 (0.950)
<i>Indirect Effects via Shared with Family Member^{3-month}</i>			
Pedigree		Ref.	Ref.
Risk Assessment		2.39 (0.046)	1.22 (0.034)
Behavioral Recommendations		2.82 (0.040)	1.27 (0.034)

Notes: BIC = 1105.51; Intercept omitted; Clustering adjusted with Huber/White/sandwich estimator; Statistically significant (α = 0.05) effects are bolded.

providers. Our findings highlight a potential way to overcome the language, socioeconomic, and associated genetic/health literacy barriers to preventive service utilization in Hispanic populations—capitalizing on family ties to motivate individuals to seek care proactively. It would be valuable to test with dyadic data whether a reciprocating tie from another family member either discussing disease risk or encouraging seeking care is associated with sharing family history with providers.

Our results have broader implications for medical information disclosure. Previous research has identified a number of barriers for patients to share family history proactively and accurately, but the focus has remained largely on the individuals. (Levy et al., 2018; Goergen et al., 2016) Our study takes a different perspective, considering this issue in the context of family environment. Health communication occurs frequently in couples, parent and child pairs, and adult siblings regarding common disease risk because of shared genetics and/or social environment. (De La Haye et al. Apr 1, 2014; Koehly et al., 2008; Lewis et al., 2006; Rohrbaugh et al., 2011) Our results suggest that conversations with family precede those with healthcare providers. It is therefore important to consider how interpersonal processes might have already shaped one's opinion and decisions about what (not) to disclose to healthcare providers.

The primary limitation of our study results from its selective sample. The findings may not be generalizable to other populations living in other geographic areas or with different social and cultural backgrounds. Future research should ascertain whether the findings are unique to Mexican-heritage families where family ties are of central value, or broadly applicable to other racial/ethnic groups. Relatedly, there is also collinearity between parenthood, primary language spoken and education in our data. We cannot fully disentangle the independent contribution of these factors. Second, the study has a short observation window and individuals may not have had the chance to visit their healthcare providers by the time of the follow-up interview. Yet by ten-month follow-up there is already an increase in the number of individuals who are willing to share—a group that future interventions should target. A sizable portion of the individuals have already shifted from not sharing to sharing (22%) during the ten-month study period. Over time we might observe a greater change and a more prominent effect of family health communication ties. Third, the study design may have introduced a confounding factor—asking about sharing feedback with healthcare providers at three-month follow-up suggests the importance of doing so and might have reminded the participants to consider sharing. Future research should properly control for such an effect. Finally, our data were collected during 2008–2010. More up-to-date information is needed to assess sharing and willingness to share family history with healthcare providers in Mexican Americans adults and other populations.

Despite the limitations, our findings suggest that an interpersonal perspective holds promise for identifying the optimal approach to motivate Mexican American adults and, potentially, other at-risk populations to share their family history with healthcare providers proactively.

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6. Disclaimer

The views expressed in this article are those of the authors and do not

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CRedit authorship contribution statement

Jeriel F. Ake: Conceptualization, Data curation, Formal analysis, Visualization, Writing - original draft. **Jielu Lin:** Conceptualization, Data curation, Formal analysis, Methodology, Software, Supervision, Writing - original draft, Writing - review & editing. **Anna V. Wilkinson:** Conceptualization, Funding acquisition, Investigation, Writing - review & editing. **Laura M. Koehly:** Conceptualization, Funding acquisition, Supervision, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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