

Effects of Training on Social Work, Nursing and Medical Trainees' Knowledge, Attitudes and Beliefs Related to Screening and Brief Intervention for Alcohol Use

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ABSTRACT

Indiana University's Schools of Social Work, Nursing and Medicine formed a consortium to advance education for Screening Brief Intervention and Referral to Treatment (SBIRT). Trainees participated in SBIRT training and completed data collection before, immediately after, and 30 days after a face-to-face training. The study explored participants' perceptions about the training and the likelihood of implementing SBI in practice, including attitudes and beliefs that may be predictive of SBIRT utilization in clinical practice. Results show the training targeting SBI and MI behaviors may improve participants' self-reported competence with SBI. This improvement was consistent and strong in all programs. The study results also provided a preliminary indication that the training affected participants' perception of time utilization and compensation for performing SBI.

Keywords: knowledge, attitudes, beliefs, SBIRT, training

INTRODUCTION

Harmful alcohol use is a major public health concern worldwide, causing many medical, psychological, social and economic problems (World Health Organization [WHO], 2014). In the United States, definitive research on actual causes of death in the year 2000 ranked alcohol as the third leading cause, ahead of microbial agents, toxic agents, firearms and all illicit use of drugs (Mokdad, Marks, Stroup, & Gerberding, 2004). More recently, Kanny and colleagues (2015) reported that, between 2010 and 2012, an average of six deaths each day were attributable to alcohol poisoning. Nationally, other paradigms of alcohol use are widespread as well, with recent estimates of current drinking ranging from 52% for those age 12 or older (Center for Behavioral Health Statistics and Quality, 2015) to nearly 65% for those age 18 or older (Schoenborn, Adams, & Peregoy, 2013), with a median cost of \$3.5 billion per state (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015). Cannon and colleagues (2015) report that nearly 2 million women of child-bearing age were at risk of an alcohol exposed pregnancy during a single month in the 2002-2003 calendar year in the United States. Additional national health behavior surveillance indicates a significant number of adults engage in heavy drinking (Center for Disease Control and Prevention [CDC], 2012), defined as five or more drinks for men and four or more drinks for women in a two-hour timespan — the amounts typically sufficient to reach a blood alcohol content of .08 (National Institute of Alcohol Abuse and Alcoholism [NIAAA], n.d.). The potential consequences of heavy drinking include a multitude of short- and long-term adverse effects that increase the likelihood of injury, chronic disease and early death (CDC, 2012). The WHO recently drew a previously undefined causal link between harmful alcohol use and infectious diseases, including tuberculosis and HIV/AIDS (WHO, 2014). These consequences exist in addition to other comparatively less severe outcomes associated with asymptomatic, but potentially harmful, alcohol use patterns that may go undetected because they do not meet diagnostic criteria (McCance-Katz & Satterfield, 2012; Saitz, 2005).

Given the widespread nature of this problem, there is a great need for approaches to reduce alcohol use across the spectrum of severity, including harmful, hazardous and dependent use, as well as other synonymous categories of use as identified by different

organizations (Reid, Fiellin, & O'Connor, 1999). Screening, brief intervention and referral to treatment (SBIRT) for alcohol use is one such evidence-based approach. Employing short screening tools, brief interventions (typically using motivational interviewing [MI]) and a referral process, SBIRT is an integrated method of early identification, prevention and treatment for the spectrum of problem alcohol use (Agerwala & McCance-Katz, 2012). Studies of screening in primary care have shown a positive impact for all levels of alcohol use severity (Fiellin, Reid, & O'Connor, 2000). Importantly, SBIRT has been shown to be effective at reducing alcohol consumption (Bertholet, Daeppen, Wietlisbach, Fleming, & Burnand, 2005; Cherpitel, Moskalewicz, Swiatkiewicz, Ye, & Bond, 2009; Kaner, Dickinson, Beyer, Pienaar, Schlesinger, Campbell, et al., 2009) and improving general and mental health (Madras et al., 2009). SBIRT can benefit both patients and their family members, who can be important partners in addressing substance use (CSAT, 2007); while 'standard' intake and diagnosis processes may identify dependent users, risky or problematic users who are non-dependent can be identified using SBIRT screening. In fact, brief interventions associated with SBIRT may be most efficacious in patients who exhibit risky or problematic use but who are not dependent or treatment-seeking (O'Donnell, Anderson, Newbury-Birch, Schulte, Schmidt, Reimer, et al., 2013). SBIRT also has the potential to benefit a large number of clients at significant economic savings (Quanbeck, Lang, Enami, & Brown, 2010; Solberg, Maciosek, & Edwards, 2008), and it can be efficient in terms of time utilization (McIntire et al., 2013). Further, the Joint Commission currently supports screening and brief intervention (SBI) for alcohol use as an optional core measure for inpatient care, with the measure also endorsed by the National Quality Forum in 2014 (The Joint Commission, 2015). The U.S. Preventive Services Task Force (USPSTF) recently updated its 2004 recommendation, giving a Grade B recommendation to screening for risky/hazardous drinking along with brief behavioral counseling interventions (Moyer, 2013). A number of professional societies, including the Council on Social Work Education (CSWE, 2016), American Psychiatric Nurses Association (APNA, 2012), American Medical Association and WHO (CASA, 2012) have endorsed the use of SBIRT in clinical practice.

SBIRT can also serve as a complementary process to a parallel paradigm in healthcare case management, which is a client-cen-

tered process focusing on coordinated care (SAMHSA, 2012). SAMHSA has provided guidance focusing on *Case Management for Substance Abuse Treatment* – this is entirely sensible, as alcohol misuse and abuse can affect numerous aspects of an individual’s life (Vanderplasschen, Rapp, Wolf, & Broekaert, 2004; Rapp, Van Den Noortgate, Broekaert & Vanderplasschen, 2014). Integrating SBIRT for alcohol within a system of care is a time-efficient means of identifying potential substance-related issues (McIntire et al., 2013) that allows providers to become aware of and/or identify behaviors that a patient/client may wish to change while learning skillsets, such as motivational interviewing, that can assist with that change. In fact, some case management programs have utilized a technique (MI) recommended for use with SBIRT (May, Marais, Gossage, Barnard, Joubert, Cloete, et al., 2013).

Graduate programs in social work and nursing prepare advanced practitioners to provide client-centered care to those with the greatest need and often the least access to mental health and addiction treatment and, thus, are especially suited for training students to implement SBIRT (Broyles, Kraemer, Kengor, & Gordon, 2013; Pugatch, Putney, O’Brien, Rabinow, Weitzman, & Levy, 2015). Medical residents are also excellent candidates for implementing SBIRT because most adults in the United States seek primary care annually (Schiller, Lucas, & Peregoy 2012) and evidence shows that substance use problems are overrepresented in primary care (Cherpitel & Ye, 2008).

Based on the shared commitment to address problem alcohol use, the Indiana University’s Schools of Social Work, Nursing and Medicine formed a consortium to advance education for SBIRT in this context. Trainees from all three disciplines participated in SBIRT education and completed data collection before, immediately after and 30 days after a face-to-face training session (the final component of the training), in order to provide a knowledge base to support curricular modification and to meet federal reporting standards. The purpose of this study was to describe participants’ perceptions about the training and the likelihood of implementing SBI in practice, including attitudes and beliefs that may be predictive of SBIRT utilization in clinical practice.

SBIRT TRAINING

The three-step, sequential curriculum for this project included an initial set of distinctive and innovative PowerPoint presentations, interactive Flash-based online educational modules, and face-to-face motivational interviewing (MI) training that offered students opportunities to practice SBIRT in a simulated setting.

Specifically, the four online comprehensive PowerPoint presentations defined SBIRT and provided various examples of screening and brief interventions in clinical settings along with supporting evidence for identifying and effectively intervening with those who are at moderate or high risk for psychosocial or health care problems related to their substance use. These presentations also addressed SBIRT's value for patients and clients, payers, policymakers, physicians, nurses, social workers and allied health and human service professionals. Second, participating students completed three online modules, respectively, on alcohol, marijuana and MI. Each one-hour module included an interactive quiz requiring a minimum of an 85% score for passing. Lastly, all students completed face-to-face, four-hour MI training using a set curriculum that included simulated role play to integrate appropriate motivational strategies for each of the Stages of Change - Precontemplation, Contemplation, Preparation, Action and Maintenance (Prochaska & DiClemente, 1983).

METHODS

Survey Administration

To support curriculum improvement, each individual ($N=155$) who participated in the mixed-methods SBIRT training program was asked to complete three survey instruments at three different points in time: prior to receiving any training, immediately following the face-to-face training, and 30 days following the face-to-face training. The survey instruments contained a variety of items designed to support assessment of educational and programmatic goals, as well as questions necessary for federal Government Performance and Results Act (GPRA) reporting. The pre-training survey contained 37 items, the post-training survey contained 51 items and the 30-day post-training survey contained 57 items. The pre-training and post-training surveys were

completed using a paper form, and the 30-day post-training survey was completed using an electronic data collection platform. A total of 148 participants (95%) completed the pre-training instrument, 155 (100%) completed the post-training instrument, and 122 (79%) completed the 30-day post-training instrument (details available in *Sample Selection*). The university IRB approved utilization of these data for this research study.

Sample Selection

The initial sample ($N=155$) included 31 physicians, 27 nurses and 97 social workers. Because this study was an assessment of change over time across a treatment effect, any participant who did not complete all three survey instruments was eliminated from the sample. This resulted in the exclusion of data from 40 participants (11 physicians, 3 nurses and 26 social workers) from the dataset. To determine whether the excluded individuals differed from the included individuals on any study characteristic, we ran separate, independent two-tailed, t tests for physicians and social workers to compare pre-training survey responses between individuals who were excluded for non-completion and those who were included (the subsample of excluded nurses was too small for statistical comparison). There were no significant differences between these two groups on any of the items included in this study (analyses not shown). Finally, given that 20 physicians remained in the sample, we randomly selected 20 nurses from the 24 available and 20 social workers from the 71 available using a random number generator to produce equal group sizes for the ANOVA analyses (Harwell, Rubinstein, Hayes, & Olds, 1992).

Item Selection and Scale Development

This study focused on 19 items common to all three survey instruments. These items were identified in prior research by Gassman (2003) as being predictive of the likelihood of performing SBI, though Gassman's work utilized factor analysis to suggest 21 items separated into six scales into which the items appropriately fell. Two items from Gassman's work were eliminated from this study a priori because they presupposed clinical experience, which not all participants had, yielding the 19 items with which this study began. We then excluded an additional 6 of 19 items, including two complete scales, after assessing inter-rater reliability for this cohort. The remaining 13 items comprised

four scales, which respectively assessed self-reported competence with SBI behaviors, perceived role legitimacy, skepticism about behavioral healthcare, and time utilization and compensation (see Figure 1). Cronbach's alpha levels for these four scales ranged from 0.574 to 0.758 at pre-test, 0.517 to 0.779 at post-test and 0.673 to 0.813 at follow-up. In general, alpha levels above 0.700 are considered 'good' and those higher than 0.600 may be adequate (Henson, 2001). However, heterogeneous constructs and short scale length may artificially deflate alpha levels (Tavakol & Dennick, 2011); scales with more items have higher alpha levels than shorter scales with the same level of inter-item correlation (Cortina, 1993).

Statistical Analyses

We used 3x3 mixed ANOVAs (ASB design) to compare differences among the three professions across the duration of the training structure for each scale. Within-subjects effects were tested for the assumption of sphericity and the Greenhouse-Geisser correction was used in instances where the assumption was violated. Within-subjects contrasts (e.g., 'administration time' and 'administration time by profession') used pre-training survey administration as the point of comparison. Equality of variances across professions was assessed using Levene's test. When equal variances were observed, post-hoc test values were generated by Tukey's HSD test, but when unequal variances were observed, post-hoc test values were generated using the Games-Howell test. Effect sizes were reported using partial eta squared values with the premise that 0.10, 0.25, and 0.40 represented small, medium and large effect sizes, respectively (Cohen, 1992).

RESULTS

The means, standard deviations and statistical analyses for each scale are shown in Tables 1 through 4. Time of survey administration had a significant main effect on participants' self-reported level of competence with SBI processes ($F=69.27$, $df_1=1.60$, $df_2=91.3$, $p<0.001$, $\eta^2_p = 0.55$), with significant improvement observed both immediately post-training ($F=89.75$, $df_1=1$, $df_2=57$, $p<0.001$, $\eta^2_p = 0.61$) and 30 days post-training ($F=74.42$, $df_1=1$, $df_2=57$, $p<0.001$, $\eta^2_p = 0.57$). The effect sizes for these findings were all large (>0.40). Further, participants' profession

had a significant main effect on self-reported level of competence ($F=7.19$, $df_1=2$, $df_2=57$, $p=0.002$, $\eta^2_p = 0.20$), with the Games-Howell post-hoc tests indicating that physicians reported higher levels of competence than social workers during this study (mean difference = -0.48, $p=0.004$).

No significant outcomes were observed in terms of the training's effect on participants' perceived role legitimacy or on participants' skepticism about behavioral healthcare. However, participants' profession did have a small (0.11) but non-significant main effect on perceived role legitimacy, and it is possible that the finding was non-significant because the sample size for this study did not provide sufficient power to reliably assess small effects (Cohen, 1992).

Finally, time of survey administration had a significant main effect on participants' perception of time utilization and compensation for performing SBI services ($F=4.79$, $df_1=2$, $df_2=106$, $p=0.010$, $\eta^2_p = 0.08$). In addition, participants' profession had a significant main effect on perception of benefits for SBI behaviors ($F=4.06$, $df_1=2$, $df_2=53$, $p=0.023$, $\eta^2_p = 0.13$). However, this analysis also showed a significant interaction effect between time and profession ($F=2.64$, $df_1=4$, $df_2=106$, $p=0.038$, $\eta^2_p = 0.09$), making interpretation of the main effects less straightforward. To examine interaction between independent variables, we utilized a plot of the estimated marginal means (see Figure 2). Physicians' scores began much 'worse' than other participants, then improved more markedly than nurses' and social workers' scores from pre-test to post-test, and finally rebounded less strongly than did nurses' scores from post-test to 30 days post-test. The significant interaction result thus partly appears to be a result of the relatively poor pre-test scores for physicians.

DISCUSSION

This study provides preliminary evidence that the structured educational intervention targeting SBI and MI behaviors described in this paper, incorporated into the curricula of three professions (internal medicine, nursing and social work), may improve participants' self-reported competence with SBI. This improvement was consistent and strong for students in all three programs. Although social workers generally reported lower mean levels of self-re-

ported competence, their improvement mirrored that of nurses and physicians in magnitude. This may be an important finding because prior research among physicians and nurse practitioners indicates that low self-confidence relative to SBI may be a barrier to utilization, whereas high self-confidence may increase the stated likelihood of utilization (Gassman, 2003). Additional pilot work also suggests that self-confidence, as measured using the scale from this study, predicts whether family nurse practitioners will utilize screening tools in clinical practice (Agle, McNelis, Carlson, Schwindt, Clark, et al., 2016). The extent to which this relationship also holds true for social workers is unclear and may be an appropriate topic for future research, though it is hypothesized, given the large body of other work examining social workers' self-efficacy and perceptions of competence (e.g., Collins, 2015), that a relationship would be observed.

The study results also provide a preliminary indication that the educational intervention affected participants' perception of time utilization and compensation for performing SBI. The effect of the training, however, was different based on the trainee's educational program (see Figure 2). Though the perceptions of all three types of trainees about time utilization/compensation issues related to SBI improved from pre-training to post-training, physicians improved most markedly. Then, 30 days after the training, social workers and nurses rebounded and reported perceptions at or worse than their initial perceptions, whereas physicians rebounded much less robustly. The reasons for this interaction are unclear in this analytical structure, but may logically be related to physicians' initially high negative perception of time and resource costs associated with SBI.

Limitations

Interpretation and generalization of this study are limited by several factors. First, because a primary intention of this study was to compare mean attitudinal values across professions, the total study final sample size ($n=60$) was restricted to support assumptions of ANOVA by avoiding very large variations in group sizes. This may have had the effect of suppressing the statistical significance of some small or medium effects that the training may have had on participants. Second, this was not a randomized trial nor did it have a control component, so the extent to which causality can be imputed to the training alone is limited to only the

longitudinal design. Third, interpretation is affected by the fact that all participants were recruited from the same university system, though some generalizability may be inferred to other large, urban, public U.S. universities. Finally, some of the scales used to calculate values for this study had less-than-optimal internal reliability scores. This was not found to be true of the ‘competence’ scale, however, which consistently exhibited good or excellent internal reliability. The lower reliability scores may have been the result of the short scale length and/or the perception among these particular students that some of the shared constructs were heterogeneous. Although internal reliability is a sample-specific measure, other studies utilizing these measures have reported more robust Cronbach’s alpha scores.

Implications for practice

Based on growing concerns regarding harmful alcohol use and the effectiveness of brief targeted behavioral interventions in a variety of clinical settings, multiple researchers have suggested that it is imperative that healthcare providers integrate SBI into their clinical practice (e.g., Mitchell, Fioravanti, Kane, Puskar, Hagle, & Boucek, 2015). Findings from this study provide preliminary support for structured training during degree education as a viable strategy to positively impact the attitudes and perceptions of future practitioners, especially in the area of perceived competence/self-efficacy. Expanding the training to include other disciplines and sub-specialties (e.g., medical professionals involved with pregnancy care; Wagner, Zabari, & Handel, 2015) has the potential to increase the number of providers proficient in SBI and, as a result, significantly boost access to behavioral interventions for a wide variety of patients across healthcare settings. It will be important for health professions educators, both in academic and clinical settings, to determine the most advantageous time to expose their students and/or clinicians to SBI to maximize the translation of training to actual practice behaviors and to promote sustained behavior change. Future research is recommended to examine other factors, such as personal biases, prior knowledge, experience and practice setting, which could impact participants’ receptiveness to and the effectiveness of SBI training. Additionally, research focused on degradation or strengthening of attitudes and practice habits at intervals beyond 30 days could help educators shape future curricula to ensure sustainability of practice.

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TABLE 1***Differences in reported SBI competence by profession and time***

	Pre-Training Mean (SD)	Post-Training Mean (SD)	30-Day Post- Training Mean (SD)
Profession			
Physician (n=20)	3.36 (0.48)	4.40 (0.46)	4.29 (0.49)
Nurse (n=20)	3.39 (0.45)	4.08 (0.47)	4.09 (0.41)
Social Worker (n=20)	3.06 (0.66)	3.90 (0.48)	3.65 (0.48)
Within Subjects			
	F	p	Partial Eta Sq.
Time (Overall)	69.27***	<0.001	0.55
Time*Profession	1.39	0.249	0.05
<i>Time</i>			
Pre-Training vs Post-Training	89.75***	<0.001	0.61
Pre-Training vs 30-Day Post-Training	32.63***	<0.001	0.57
Between Subjects			
	F	p	Partial Eta Sq.
Profession (Overall)	7.19**	0.002	0.20
	Mean Diff.	p	95% CI
<i>Post-Hoc</i>			
Physician vs. Social Worker	-0.48**	0.004	-0.82 - -0.14

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Note: Mean values use a scale from 1 ('low competence') to 5 ('high competence').

TABLE 2***Differences in perceived SBI role legitimacy by profession and time***

	Pre-Training <i>Mean (SD)</i>	Post-Training <i>Mean (SD)</i>	30-Day Post-Training <i>Mean (SD)</i>
Profession			
Physician (n=19)	3.91 (0.39)	4.20 (0.34)	4.13 (0.53)
Nurse (n=20)	3.85 (0.49)	3.84 (0.59)	3.84 (0.50)
Social Worker (n=14)	4.02 (0.37)	4.05 (0.52)	4.05 (0.55)
Between Subjects	F	p	Partial Eta Sq.
Profession (Overall)	2.95	0.061	0.11

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Note: Mean values use a scale from 1 ('low perceived legitimacy') to 5 ('high perceived legitimacy').

TABLE 3***Differences in skepticism of behavioral healthcare by profession and time***

	Pre-Training <i>Mean (SD)</i>	Post-Training <i>Mean (SD)</i>	30-Day Post-Training <i>Mean (SD)</i>
Profession			
Physician (n=20)	2.30 (0.71)	2.08 (0.73)	2.28 (0.80)
Nurse (n=19)	2.44 (0.76)	2.19 (0.62)	2.46 (0.64)
Social Worker (n=20)	2.15 (0.69)	2.18 (0.50)	2.12 (0.60)

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Note: Mean values use a scale from 1 ('low skepticism') to 5 ('high skepticism').

TABLE 4***Differences in perception of cost/reward for SBI by profession and time***

	Pre-Training <i>Mean (SD)</i>	Post-Training <i>Mean (SD)</i>	30-Day Post-Training <i>Mean (SD)</i>
Profession			
Physician (n=20)	2.50 (0.69)	3.13 (0.90)	3.00 (0.86)
Nurse (n=19)	3.11 (0.94)	3.21 (0.61)	2.89 (0.97)
Social Worker (n=17)	3.41 (0.69)	3.59 (0.54)	3.47 (0.88)
Within Subjects			
	F	p	Partial Eta Sq.
Time (Overall)	4.79**	0.010	0.08
Time*Profession	2.64*	0.038	0.09
<i>Time</i>			
Pre-Training vs Post-Training	9.92**	0.003	0.16
Pre-Training vs 30-Day Post-Training	1.32	0.255	0.02
<i>Time*Profession</i>			
Pre-Training vs Post-Training	3.01	0.058	0.10
Pre-Training vs 30-Day Post-Training	4.43*	0.017	0.14
Between Subjects			
	F	p	Partial Eta Sq.
Profession (Overall)	4.06*	0.023	0.13

* = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Note: Mean values use a scale from 1 ('high cost/low reward') to 5 ('low cost/high reward').

FIGURE 1

Scales of constructs predictive of SBI performance

Scale 1: Competence ($\alpha=0.740$)

Response options ranged from 1 (Strongly Agree) to 5 (Strongly Disagree)

“I know what questions to ask patients to obtain information on their alcohol consumption.”

“I am comfortable asking about a patient’s drinking patterns.”

“I know how I would effectively go about helping patients to reduce their drinking.”

“I am at ease making these statements.”

Scale 2: Perceived Role Legitimacy ($\alpha=0.574$)

Response options ranged from 1 (Always) to 4 (Rarely or Never) and included the option ‘Not Sure’

“How often do you think colleagues in your field screen patients for drinking problems?”

“How often do you think colleagues in your field state their concerns about patients’ drinking patterns and related health risks?”

Response options ranged from 1 (Most of my colleagues would approve) to 4 (They would not approve) and included the option ‘Not Sure’

“How do you think colleagues in your field would feel about your screening patients for drinking problems?”

“How do you think your colleagues would feel about your stating concerns about a patient’s drinking patterns and health risks?”

Scale 3: Skepticism of Behavioral Healthcare ($\alpha=0.642$)

Response options ranged from 1 (Strongly Agree) to 5 (Strongly Disagree); reverse-coded items were recoded prior to analysis to obtain consistent directionality.

“I am not aware of a single problem drinker who ever cut back on his or her drinking upon advice from his or her care provider (e.g., physicians, nurses or social workers).”

“In general, I am somewhat skeptical about the efficacy of behavioral medicine.”

“Given adequate information and training, care providers (e.g., physicians, nurses or social workers) can help patients reduce their alcohol consumption.”

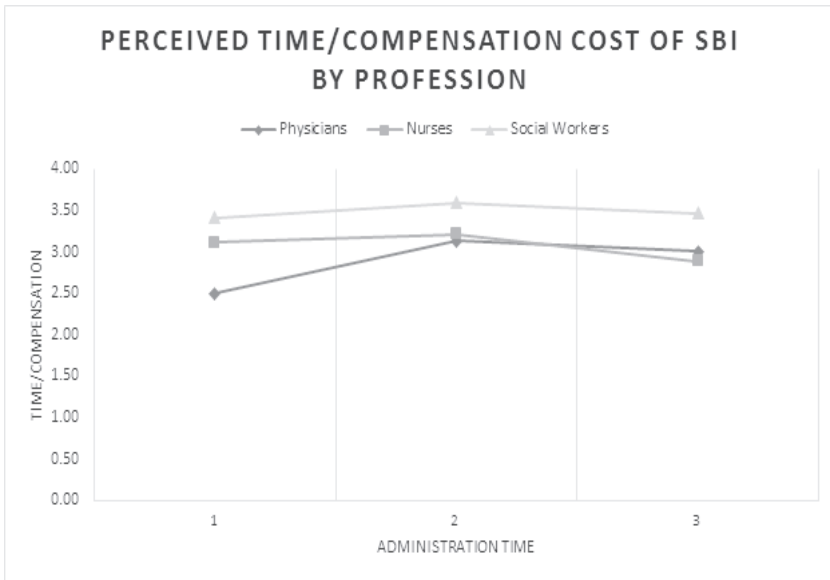
Scale 4: Time Utilization and Compensation ($\alpha=0.758$)

Response options ranged from 1 (Strongly Agree) to 5 (Strongly Disagree); reverse-coded items were recoded prior to analysis to obtain consistent directionality.

“There is not enough time to advise patients about drinking.”

“Patients would not be willing to pay a fee for alcohol counseling.”

FIGURE 2



Note: A score of 0 indicates high cost/low reward and a score of 5 indicates low cost/high reward.