

Predictive model for High Self-reported Hand Hygiene compliance in Intensive Care Units in Pakistan

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MCLAWS M-L¹, DAMANI N², RAJA A³, ALLEGRANZI B⁴, PITTET D⁵

SAVE LIVES:
Clean **Your** Hands

Contact Information

B. Allegranzi, World Health Organization Geneva, Switzerland
E mail : allegranzi@who.int

¹The University of New South Wales, Sydney, Australia. ²Craigavon Area Hospital, Portadown, United Kingdom. ³Pakistan Institute of Medical Sciences, Islamabad, Pakistan. ⁴Clean Care is Safer Care, WHO Patient Safety, Geneva, Switzerland and ⁵Infection Control Programme and WHO Collaborating Centre on Patient Safety, University of Geneva Hospitals and Faculty of Medicine, Geneva, Switzerland.

Objective: To identify a change in perception predicting self-reported hand hygiene (HH) compliance $\geq 60\%$ in healthcare workers (HCWs) during pre- and post-implementation of the WHO hand hygiene improvement strategy (HHIS) in Intensive Care Units (ICUs) in Pakistan.

Methods: HH perception questionnaires were distributed to HCWs in 3 ICUs pre- and post-intervention. Scales including questionnaire's items were entered in a backwards multiple logistic regression analysis to predict high self-reported HH compliance ($\geq 60\%$), while controlling for the effect of healthcare profession, service and ward. Alpha for perceptions was set at 6 % level and odds ratios were standardised by the inter quartile ranges.

Results: 97 and 77 HCWs completed the questionnaire before and after implementation respectively. Prior to the HH intervention HCWs who perceived that HH could impact on patient safety were nearly three times more likely (AOR 2.9, $p=0.01$) to report high compliance levels. HCW who did not perceive that their peers expected them to comply with HH were 90% less likely (AOR 0.1, $p=0.023$) to report high compliance in the pre-intervention survey. After the intervention HCWs who perceived the HHIS components as effective were five times more likely (AOR 5.0, $p=0.015$) to report high compliance; HCWs who perceived Alcohol Base Hand Rub (ABHR) as a cue to HH were five times more likely (AOR 5.0, $p=0.011$) to report high compliance.

Conclusion: All components of the WHO HHIS were found to strongly influence high self-reported compliance ($\geq 60\%$) among ICU HCWs in Pakistan. This strategy, especially ABHR use as a cue to memory to comply, should be continued for HH improvement sustainment.

INTRODUCTION/OBJECTIVES

Implementation of the WHO Multimodal Hand Hygiene (HH) Improvement Strategy was pilot tested in 2006-2008 in Pakistan. **The aim of the present study was to identify significant facilitators and barriers that predict high HH compliance before the improvement strategy implementation and whether the facilitators and barriers were modified after implementation.**

METHODS

Study Group: 59% nurses, 38% physicians, 3% other healthcare workers from Pakistan Institute of Medical Sciences hospital completed pre- and post surveys.

Questionnaire: The WHO pre - and post-intervention surveys¹ were provided in English and for some HCWs was translated in Urdu where appropriate by the person who was conducted the survey. These surveys were previously developed by a team of experts and verified for content and face validity in Pakistan.

Composite Scales development from surveys: Four pre-intervention survey items used dichotomous response while the remaining items in the pre- and post surveys used Likert-type scale responses. Single dichotomous response items were kept as single items. Remaining items that measured similar themes of perceptions were grouped as composite scales from pre- and post-intervention surveys, and tested for internal consistency (Cronbach α ranged 0.51-0.91).

Pre- and post intervention Perception Scales

- Peer % compliance rate
- ABHR available at point of care
- Training in HH (Yes/No)
- ABHR available (Yes/No)
- Perceived HAI%
- Perception of effort associated with HH

Post-intervention Perception Scales

- Peer % compliance rate
- ABHR acts as a facilitator for HH
- Education as a facilitator for HH
- Safety climate
- Perceptions about effectiveness of intervention strategies
- Impact of beliefs about HH
- Subjective norms

Model: Two models (pre- and post-intervention), using backwards multiple logistic regression were built while controlling for the effect of healthcare profession, service and ward. Alpha set at 6% for predictors that were perception. Odds ratios were standardised by inter-quartile ranges.

Potential predictors: Perception scales were tested as potential predictors of high hand hygiene compliance.

Outcome variable: High ($\geq 60\%$) hand hygiene compliance. 39% self-reported high HH compliance in pre-intervention period and 37% in the post-intervention period

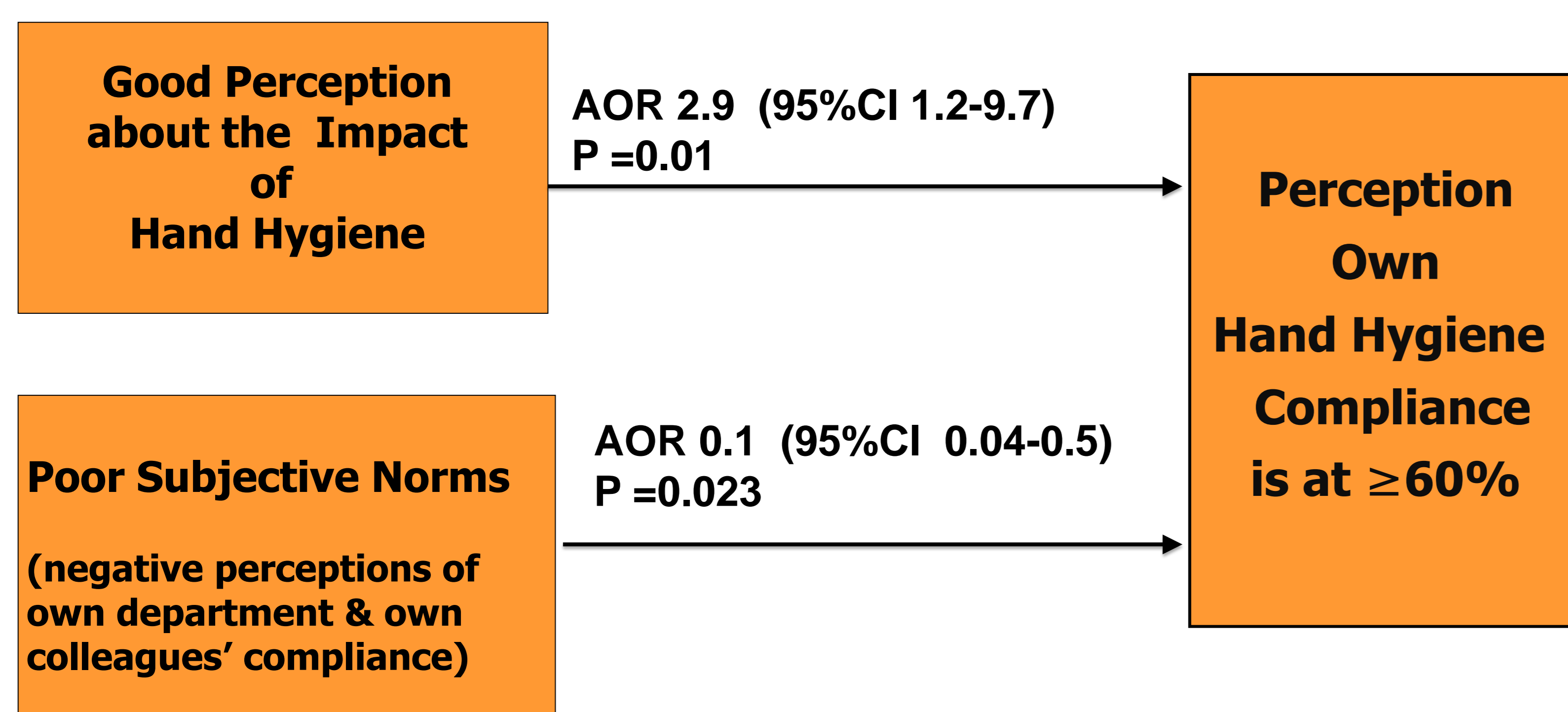
RESULTS

Pre-intervention predictive perception for high HH compliance

Of the five potential predictors for high self-reported HH compliance two significantly explained self-reported high HH compliance in the pre-intervention period:

1. **Perceptions of HH impact:** those who held beliefs that HH could positively impact patients safety were nearly three times more likely to self report high compliance (AOR 2.9 (95%CI 1.2-9.7), $p=0.01$)

2. **Subjective norms:** those who held negative perceptions about their department and colleagues' HH compliance were less likely to self report high rate of compliance (AOR 0.1 (95%CI 0.04-0.5), $p=0.023$).



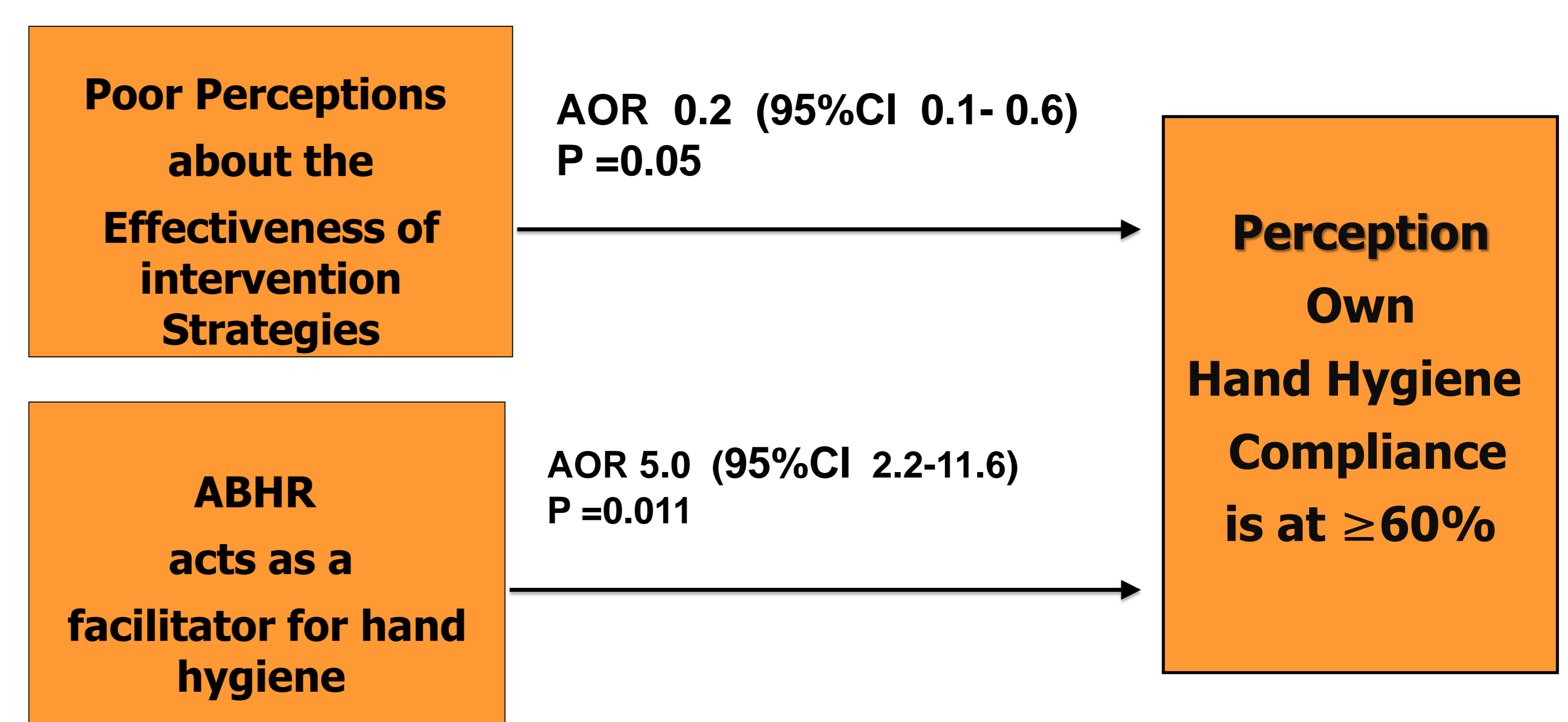
SUMMARY

Messages about the impact of HH work!
But perceptions that peer compliance is poor leads to poor individual compliance.

Post-intervention predictive perceptions for high hand hygiene

1. **Perception of the effectiveness of the intervention strategies:** those who held poor perceptions about the intervention strategies were less likely to self report high compliance (AOR 0.2 (0.1-0.6), $p=0.05$)

2. **ABHR as a facilitator for HH:** those who held a perception that ABHR assisted HH were five time more likely to report high compliance than those who did not. (AOR 5.0 (95%CI 2.2-11.6), $p=0.011$)



SUMMARY

Alcohol based hand rub availability at the point of care facilitates high HH compliance perception!
But poor perceptions about the effectiveness of the campaign strategies leads to poor compliance perception.

CONCLUSION

Campaigns can improve compliance when staff believe in the campaign strategies; **the sum of the individual's action = high hospital compliance!**
After the initial introduction of a HH campaign ABHR is a strong influence as a *cue to memory* that predicts self reported high levels of compliance.

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