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**Model Intervensi berbasis PRECEDE-PROCEED untuk Meningkatkan Perilaku Kepatuhan Penggunaan Earplug
pada Pekerja Industri Tekstil di Jawa Tengah: Studi Mixed-Methods**
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ABSTRAK

Latar belakang: Industri tekstil berisiko kebisingan tinggi, menempatkan penggunaan alat pelindung telinga (APT) *earplug* sebagai pengendalian terakhir. Intervensi edukasi individual belum mampu meningkatkan kepatuhan. Kebutuhan akan model intervensi yang sistemik dan terstruktur sangat penting untuk mengatasi permasalahan ini.
Tujuan: Mengembangkan dan mengevaluasi model intervensi berbasis PRECEDE-PROCEED untuk meningkatkan kepatuhan penggunaan *earplug*.
Metode: Penelitian menggunakan *mixed methods sequential exploratory*. Fase kualitatif *(needs assessment)* melalui *focus group discussion* (FGD) dan wawancara mendalam. Fase kuantitatif menggunakan *quasi experiment* dengan desain *non-equivalent pretest-posttest with control group* selama 18 minggu, meliputi *pretest* 3 minggu, intervensi 1 minggu, dan *posttest* 14 minggu. Pada periode *posttest*, kepatuhan diobservasi satu kali perminggu dengan waktu acak. Sampel awal 120 pekerja, kemudian melalui *propensity score matching* (PSM) diperoleh 70 responden (35 kelompok intervensi dan 35 kelompok kontrol). Intervensi meliputi edukasi perilaku, penyediaan *earplug*, dan pengawasan supervisor. *Outcome* primer adalah kepatuhan penggunaan *earplug*.
Hasil: Studi kualitatif menghasilkan 4 tema: sistem risiko berbasis data, sistem penghalang, sistem intervensi perilaku, serta tata kelola dan penegakan hukum. Model mengintegrasikan faktor predisposisi, pemungkin, dan penguat dengan memperhatikan budaya kerja. Analisis pasca PSM menunjukkan peningkatan pengetahuan ($p=0,501$) dan sikap ($p=0,700$) tidak berbeda signifikan, sedangkan kepatuhan meningkat signifikan pada kelompok intervensi dibandingkan kontrol ($p<0,001$). Analisis multivariat menunjukkan kelompok intervensi tetap berhubungan dengan kepatuhan setelah memperhitungkan kovariat ($p<0,001$)
Kesimpulan: Model PRECEDE-PROCEED menggambarkan peningkatan kepatuhan signifikan pada dua perusahaan. Kepatuhan merupakan perilaku multifaktorial yang berkaitan dengan intervensi, faktor individu, dan tempat kerja. Namun, karena masing-masing kelompok berasal dari satu perusahaan, efektivitas perlu diinterpretasikan dengan mempertimbangkan kemungkinan *site effect* atau *cluster-level confounding* yang belum sepenuhnya dapat dipisahkan dari efek intervensi.

Kata Kunci: Model PRECEDE-PROCEED, kepatuhan *earplug,* perlindungan pendengaran, pekerja tekstil, Metode campuran.

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ABSTRACT

Background: *The textile industry is at high risk of noise, placing the use of ear protection devices (earplugs) as a last resort control measure. Individual educational interventions have not been able to improve compliance. The need for a systemic and structured intervention model is crucial to address this issue.*
Objective: *To develop and evaluate a PRECEDE-PROCEED-based intervention model to improve compliance with earplug use.*
Methods: *This study employed a mixed methods sequential exploratory design. The qualitative phase (needs assessment) was conducted through focus group discussions (FGDs) and in-depth interviews. The quantitative phase used a quasi-experimental design with a non-equivalent pretest-posttest with control group over 18 weeks, consisting of a 3-week pretest, 1-week intervention, and 14-week posttest. During the posttest period, earplug compliance was observed once weekly at randomly determined times. The initial sample consisted of 120 workers; following propensity score matching (PSM), 70 matched respondents were obtained, comprising 35 in the intervention group and 35 in the control group. The intervention included behavioral education, provision of earplug PPE, and supervisor monitoring. The primary outcome was earplug use compliance.*
Results: *The qualitative study identified 4 themes: data-based risk systems, barrier systems, behavioral intervention systems, and governance and law enforcement systems. The model integrated predisposing, enabling, and reinforcing factors while considering workplace culture. Post-PSM analysis showed that increases in knowledge ($p=0.501$) and attitudes ($p=0.700$) did not differ significantly between groups, whereas earplug compliance increased significantly in the intervention group compared with the control group ($p<0.001$). Multivariate analysis showed that the intervention group remained significantly associated with compliance after adjusting for covariates ($p<0.001$).*
Conclusion: *The PRECEDE-PROCEED model demonstrated a significant improvement in earplug compliance across the two companies. Compliance was a multifactorial behavior associated with the intervention, individual factors, and workplace factors. However, because each group came from a single company, the effectiveness findings should be interpreted considering the possibility of site effect or cluster-level confounding that cannot be fully separated from the intervention effect.*

Keywords: *PRECEDE-PROCEED model, earplug compliance, hearing protection, textile workers, mixed methods study*.