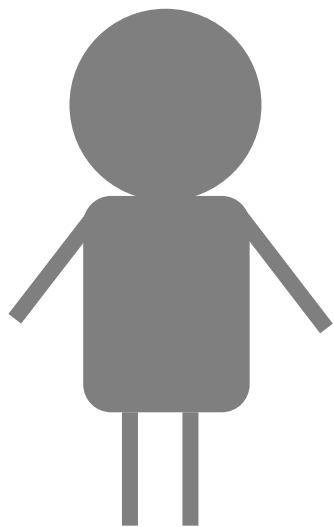


The relationship between workplace safety climate and nurses' use of hazardous drugs safe handling precautions

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Background



cancer
patient

Target therapy

Current Trends

Checkpoint immunotherapy

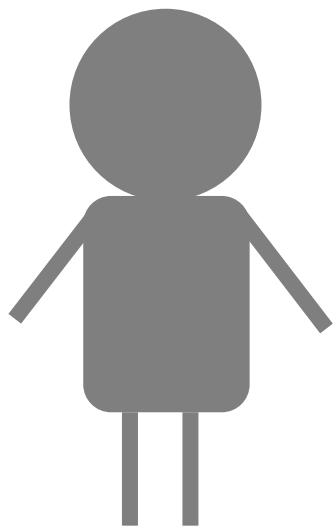
Surgery

Radiotherapy

Primary Treatments

Chemotherapy

Background



cancer
patient

Target therapy

Current Trends

Checkpoint immunotherapy

Surgery

Radiotherapy

Chemotherapy

Primary Treatments





Nurses take safety precautions when handling hazardous drugs

Protect themselves and other health care providers from the exposure

Recent studies have shown that nurses do not follow safety precautions

Common factors associated with nurses' precaution behaviors

- ❑ Barriers to personal protective equipment use

- ❑ **Safety climate**

- ❑ Workload

Problem



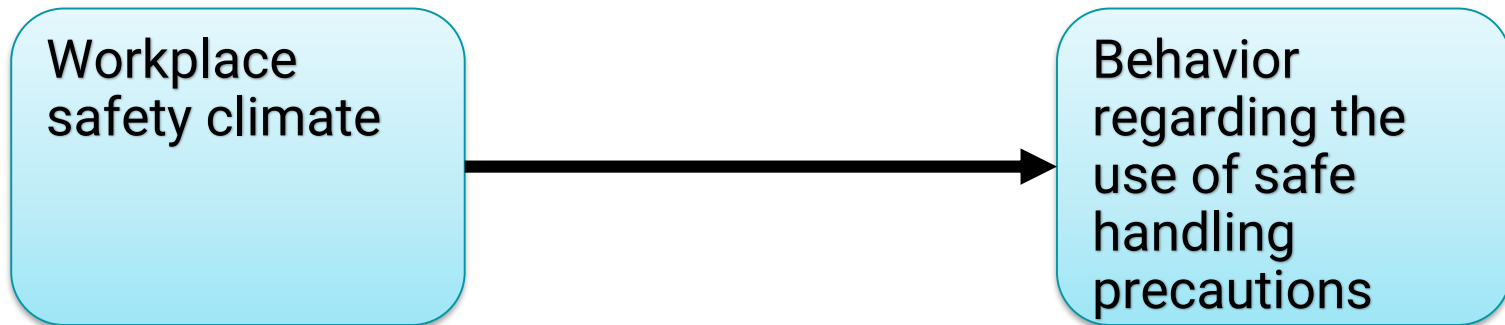
Few are aware of the safety climate sub-dimensions associated with safety behavior

- Specific safety climate sub-dimensions related to safety behavior
- Take concrete measures

Objective



Explore the relationship between





Cross-sectional design

Participants and setting

- One medical center and two regional hospitals

Inclusion criteria

The nurses' **work unit provided intravenous administration hazardous drugs**

Nurses were worked in the current unit for **over three months**

They **had experience** in hazardous drugs administration.



Instruments

developed by the researchers in accordance with the literature and clinical context



Workplace safety climate scale



Hazardous drugs safe handling behavior scale



Workplace safety climate scale

- ❑ The overall content validity index for the relevance, importance, and semantic clarity exceeded 0.9
- ❑ 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree)
- ❑ Exploratory factor analysis and confirmatory factor analysis were used to validate this instrument
- ❑ 31 items covering seven dimensions



Factors	Items
Clinical Care Situation	4
Colleagues Remind Each Other	6
Creating a safe workplace through head nurse	7
Creating a safe workplace through the organization manager	5
Easy usage of Personal Protective Equipment	3
Comfortable of the workplace	3
Comfortable of use of Personal Protective Equipment	3



Hazardous drugs safe handling behavior scale

- ❑ Emphasis on intravenous administration
- ❑ Overall content validity index was 1.0
- ❑ 5-point Likert scale to indicate how frequently
- ❑ Exploratory factor analysis and confirmatory factor analysis were used to validate this instrument
- ❑ Single dimension consisting of five items



Ethical considerations and data collection

The survey was conducted between August and December 2018, following approval by the Research Ethics Committees of the medical system.

We conducted the head nurses and ask they provided time to explain the survey to nurses.

Nurses were asked to complete the questionnaire and seal it in an enclosed envelope



Statistical analysis

This study focused on explaining an endogenous construction.

To clarify the relationship between the endogenous and exogenous variables by PLS-SEM, the sample (N = 247) for CFA was used

Measurement model
Structural model

Model

Clinical Care Situation

Colleagues Remind Each
Other

Creation of safe working
environment by the head
nurse

Creation of safe working
environment by the
organization manager

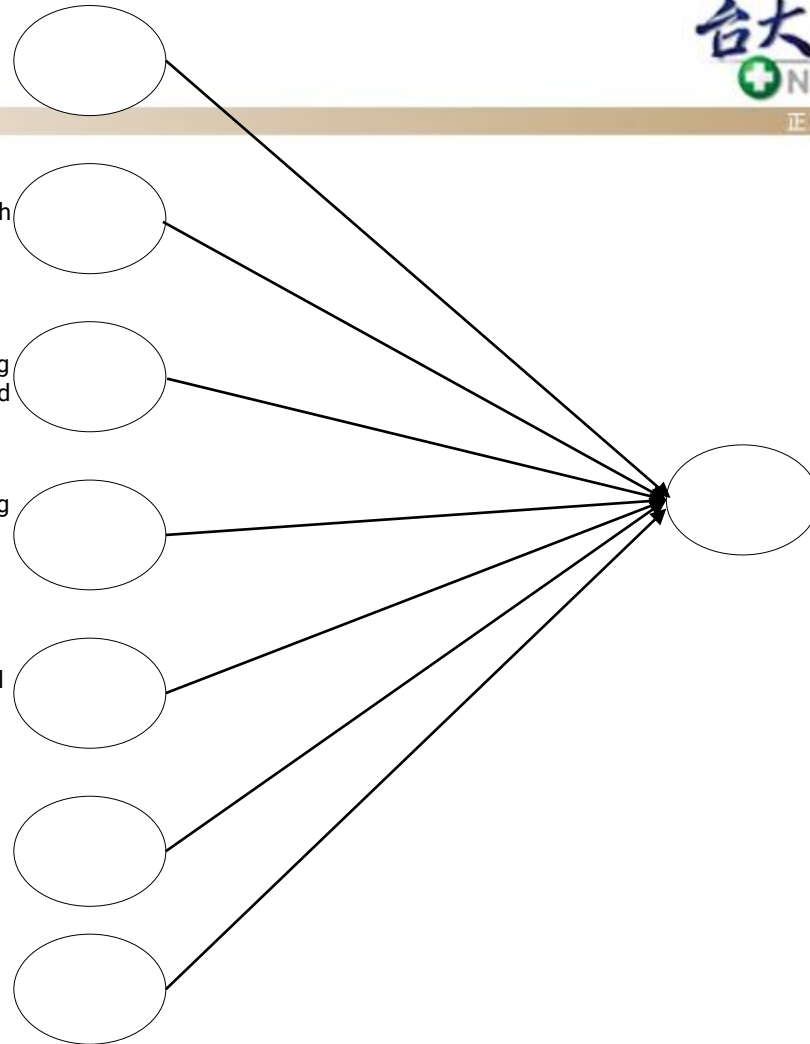
Easy usage of Personal
Protective Equipment

Comfortable of the
workplace

Comfortable of use of
Personal Protective
Equipment



Hazardous
drugs safe
handling
behavior



Results



Statistical description of the study variables (N = 247)

Factors	Mean (SD)
Clinical Care Situation	3.32(1.05)
Colleagues Remind Each Other	4.07 (0.66)
Creating a safe workplace through head nurse	4.39 (0.60)
Creating a safe workplace through the organization manager	4.58 (0.52)
Easy usage of Personal Protective Equipment	4.26 (0.75)
Comfortable of the workplace	4.07 (0.80)
Comfortable of use of Personal Protective Equipment	3.24 (1.03)
Hazardous drugs safe handling behavior	4.25 (0.84)

Results



Statistical description of the study variables (N = 247)

Factors	Cronbach's α	Composite reliability	Average variance extracted
Clinical Care Situation	0.884	0.920	0.741
Colleagues Remind Each Other	0.891	0.916	0.647
Creating a safe workplace through head nurse	0.936	0.948	0.721
Creating a safe workplace through the organization manager	0.932	0.949	0.789
Easy usage of Personal Protective Equipment	0.813	0.888	0.726
Comfortable of the workplace	0.884	0.926	0.807
Comfortable of use of Personal Protective Equipment	0.881	0.889	0.729
Hazardous drugs safe handling behavior	0.788	0.854	0.542

Results



Clinical Care Situation

Colleagues Remind
Each Other

Creation of safe working
environment by the head
nurse

Creation of safe working
environment by the
organization manager

Easy usage of
Personal Protective
Equipment

Comfortable of the
workplace

Comfortable of use of
Personal Protective
Equipment

0.158*

0.262**

0.029

0.012

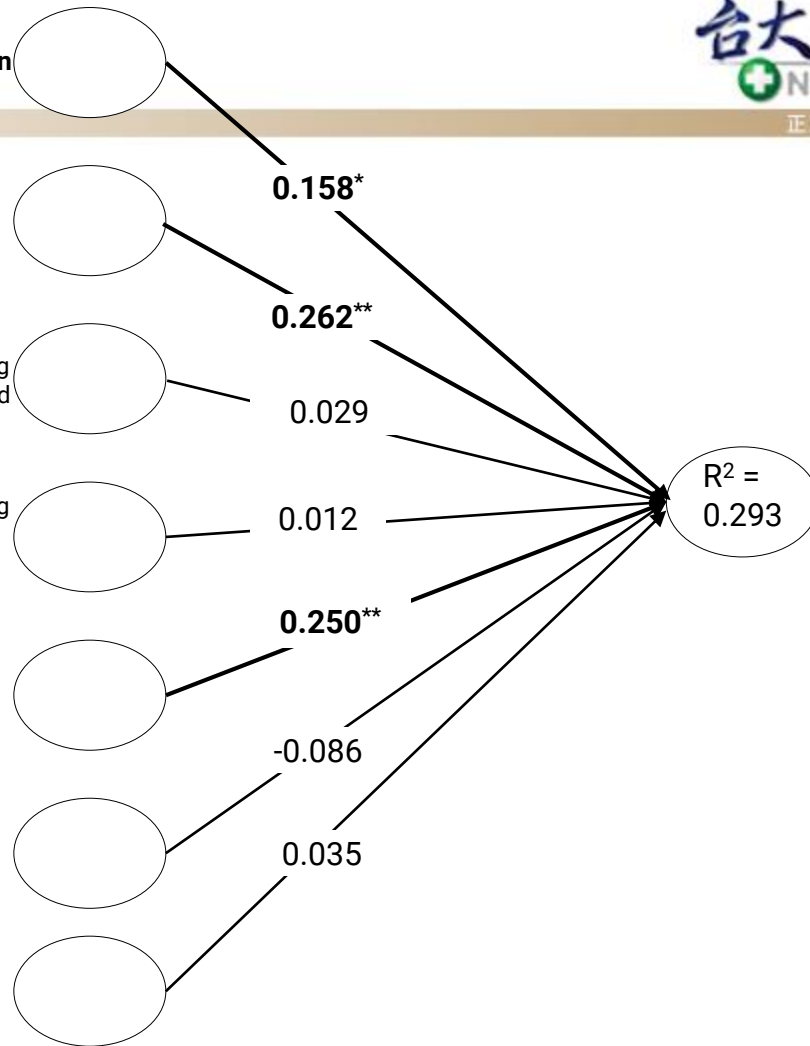
0.250**

-0.086

0.035

$R^2 =$
0.293

Hazardous
drugs safe
handling
behavior



Conclusions



**PLS-SEM does not sum the score of each dimension
Decrease the bias and accurately estimate**

**This study identified accurate factors of safety climate
associated with nurses' behavior of use of hazardous drugs
safe handling precautions.**

Conclusions



Design interventions based on the above three dimensions of safety climate

- Offer nurses a platform to discuss safety issue of their workplace
- Invite nurses who are more experienced in hazardous drugs handling to conduct regular audits
- Purchase PPE that meets safety standards and is easy to use