

Innovation of fall prevention nursing through the application of fall prevention programs with artificial intelligence(AI) monitors



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Objectives

- Inha University Hospital introduced the first AI-based fall prevention monitor in Korea in August 2021 to manage the increasing risk of falls and reduce falls.
- However, since it is still in the early stages of introduction, the effect of preventing falls has not been sufficiently verified, so the utilization of nurses is insufficient.
- Therefore, we would like to confirm the fall prevention effect through AI monitor fall prevention programs, present scientific evidence to activate the use of AI monitors and contribute to improving patient safety.

What is the AI monitor?

Monitor that uses artificial intelligence technology to detect a patient's risk of falling

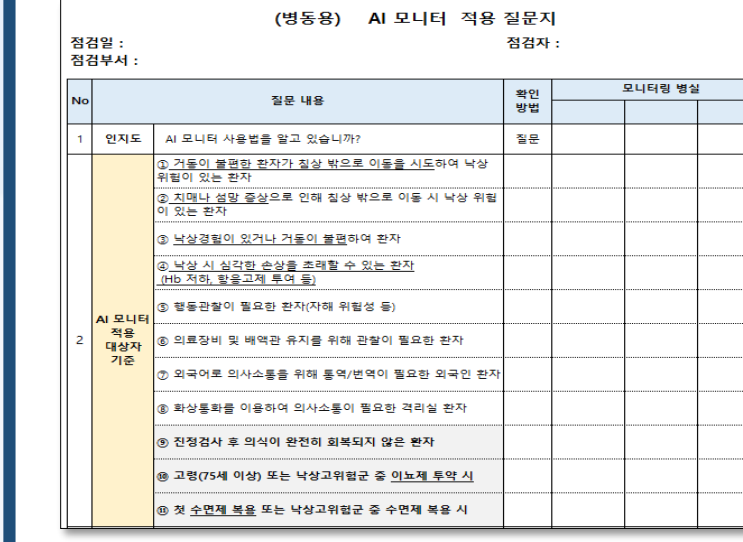


Want to know more about AI monitors?

Check with the QR code



3. Establishment of a regular monitoring system related to the use of AI monitors



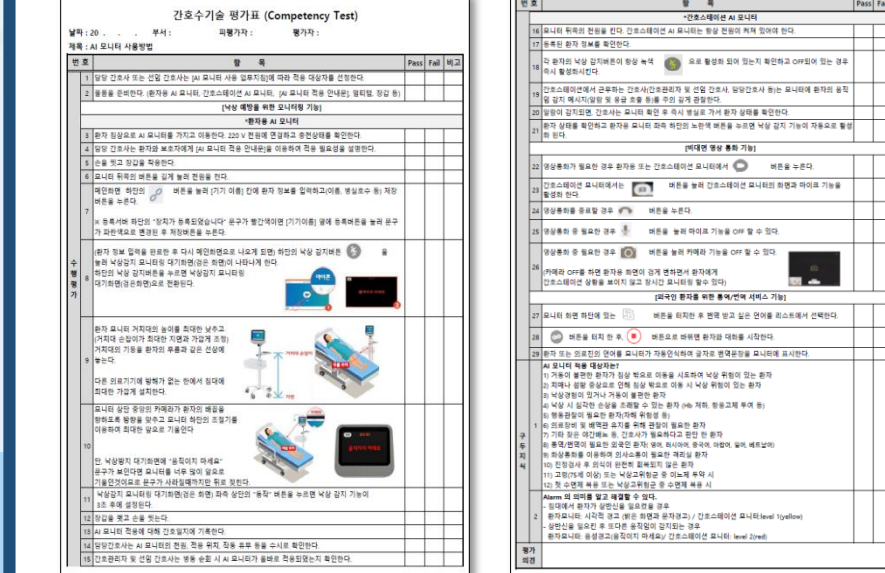
- Compliance with AI monitor application Criteria, Accurate usage compliance, Nursing record implementation status
- Immediate feedback on monitoring results
- Conduct once a month per unit

4. Conduct conference on AI monitor utilization for nurse unit manager



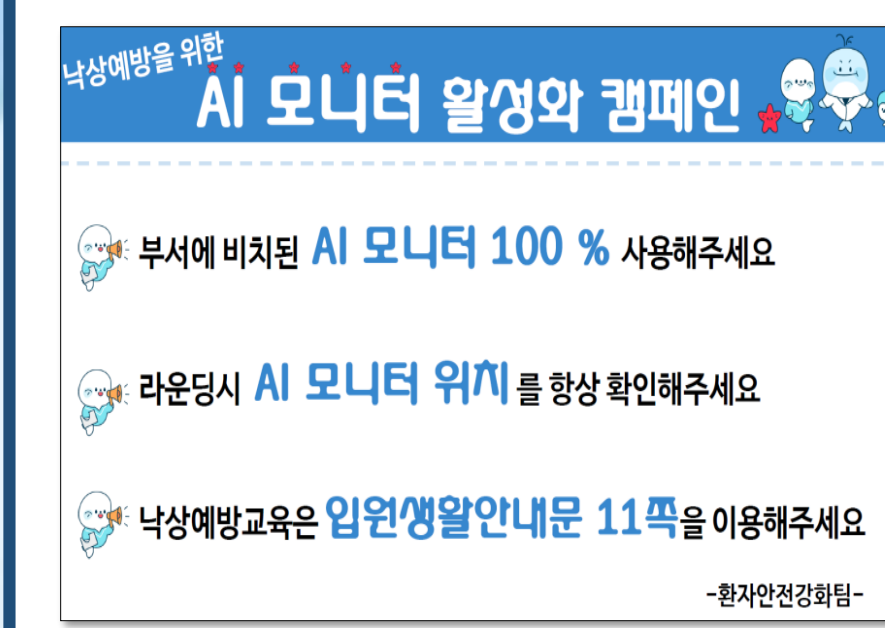
- Subject: 34 unit managers
- Contents: Fall management plan through the use of AI monitors

5. Conduct AI monitor practice tests for nurses



- Subject: 466 nurse in the general ward
- Contents
 - Fall prevention monitoring function
 - Non-face-to-face video call function
 - Interpretation/Translation Services

6. Perform a campaign to activate the use of AI monitors



- Subject: 16 general wards
- Contents
 - How to use AI monitor correctly
 - Activate the use of AI monitors

7. Update AI monitor equipment frequently(ex, Wifi error solution etc..)

8. Deploying additional AI monitors for multi-use departments

Core indicator

① Fall prevention awareness level

Definition	Attitudes of nurses toward fall prevention and use of AI monitors
Goals	10% improvement in post-study compared to pre-study
Calculation	Fall prevention awareness (post – pre) / Fall prevention awareness (pre) *100
Subject	130 nurses in the general ward

② AI monitor utilization rate

Definition	Number of AI monitors used to patients during study period
Goals	Always 75% utilization rate
Calculation	Number of AI monitors used / Total number of AI monitors *100
Subject	Pre - 63 AI monitors / post - 63~65 AI monitors

③ Fall incidence rate

Definition	Number of falls in a hospital room with an AI monitor installed
Goals	30% reduction improvement in post-study compared to pre-study
Calculation	Number of falls in the hospital room(post – pre) / Number of falls in the hospital room(pre) *100
Subject	Number of falls in general ward

Improvement activity methods

1. Development of AI monitor application criteria (12 items)

- ✓ Patients who are at risk of falls due to mobility difficulties attempting to move out of bed
- ✓ Patients at risk of falls when moving out of bed due to dementia or delirium symptoms
- ✓ Patients with impaired fall experience or mobility
- ✓ Patients who may cause serious damage in the event of a fall (such as Hb degradation, anticoagulant administration, etc.)
- ✓ Patients requiring behavioural observation (e.g. risk of self-harm)
- ✓ Patients requiring observation to maintain medical equipment and drainage bag
- ✓ Other frequent night urination, etc, a patient deemed necessary by a nurse
- ✓ Foreign patients who need translation/translation to communicate in a foreign language
- ✓ Patients in isolation who need to communicate via video call
- ✓ A patient who has not fully recovered consciousness after sedation
- ✓ When taking diuretics among elderly (75 years of age or older) or high-risk groups for falls
- ✓ When taking sleeping pills for the first time or when taking sleeping pills for high risk of falls

2. Development of AI Monitor Application Checklist

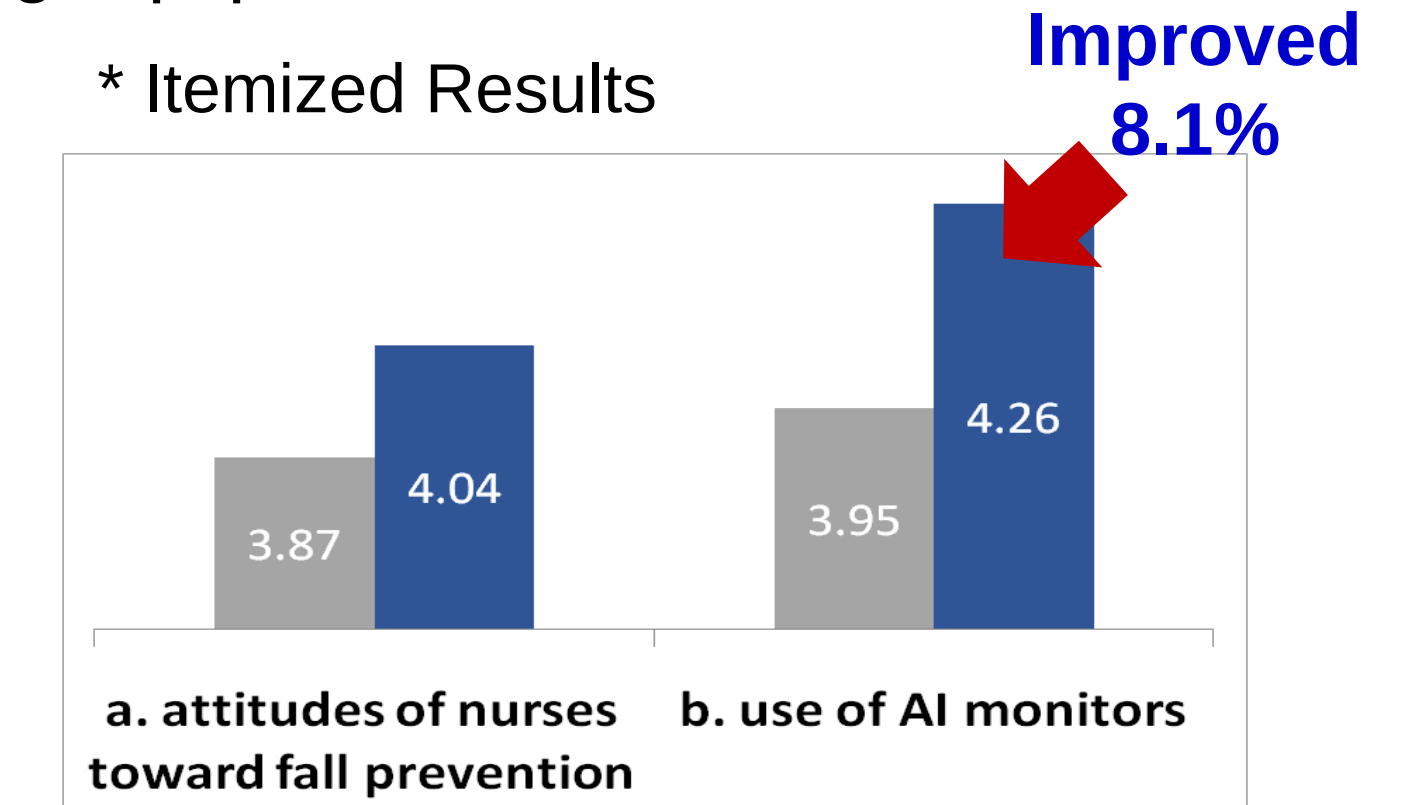
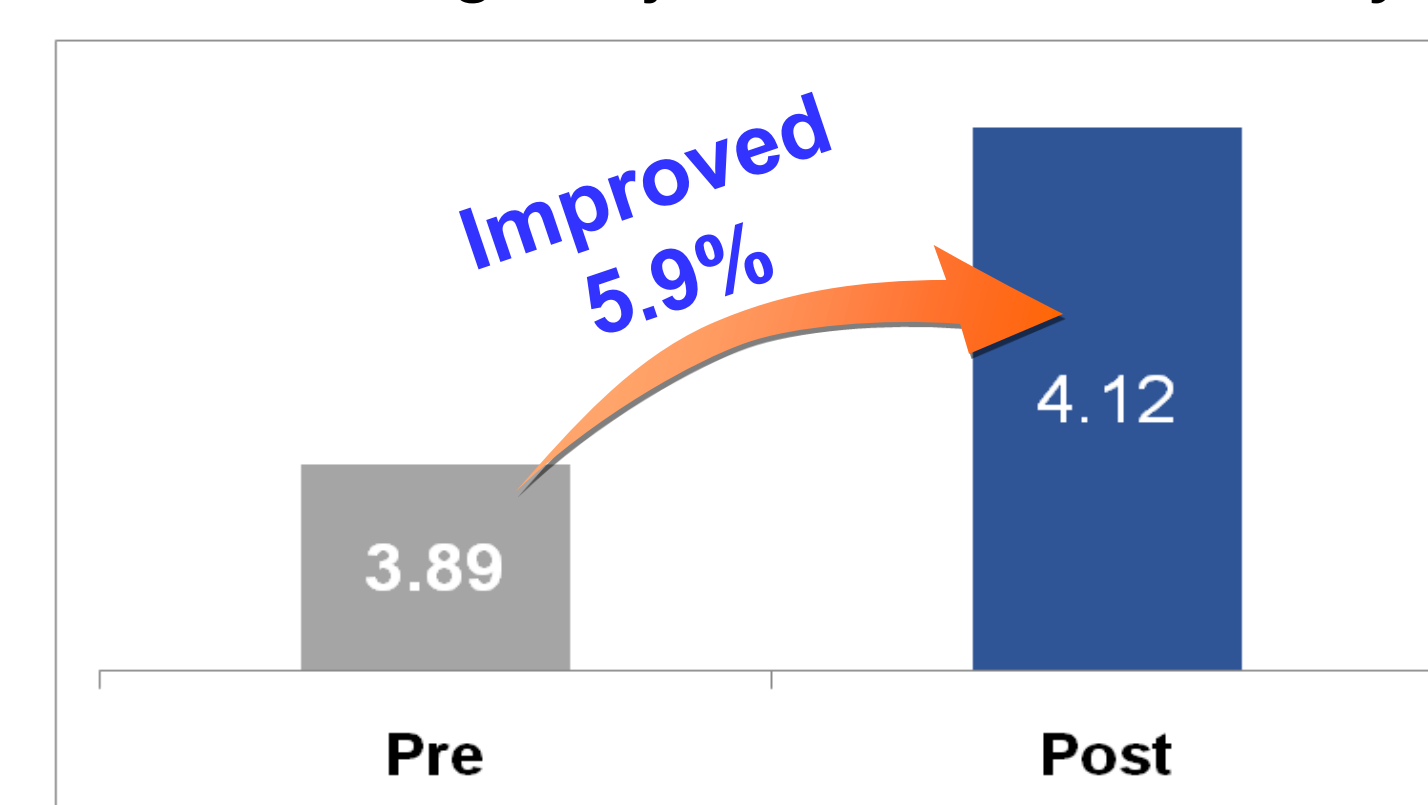


- Using a checklist for each shift : Accurate application of AI monitors, patient education, check hospital room environment
- Sharing the contents of the checklist when handing over

Results

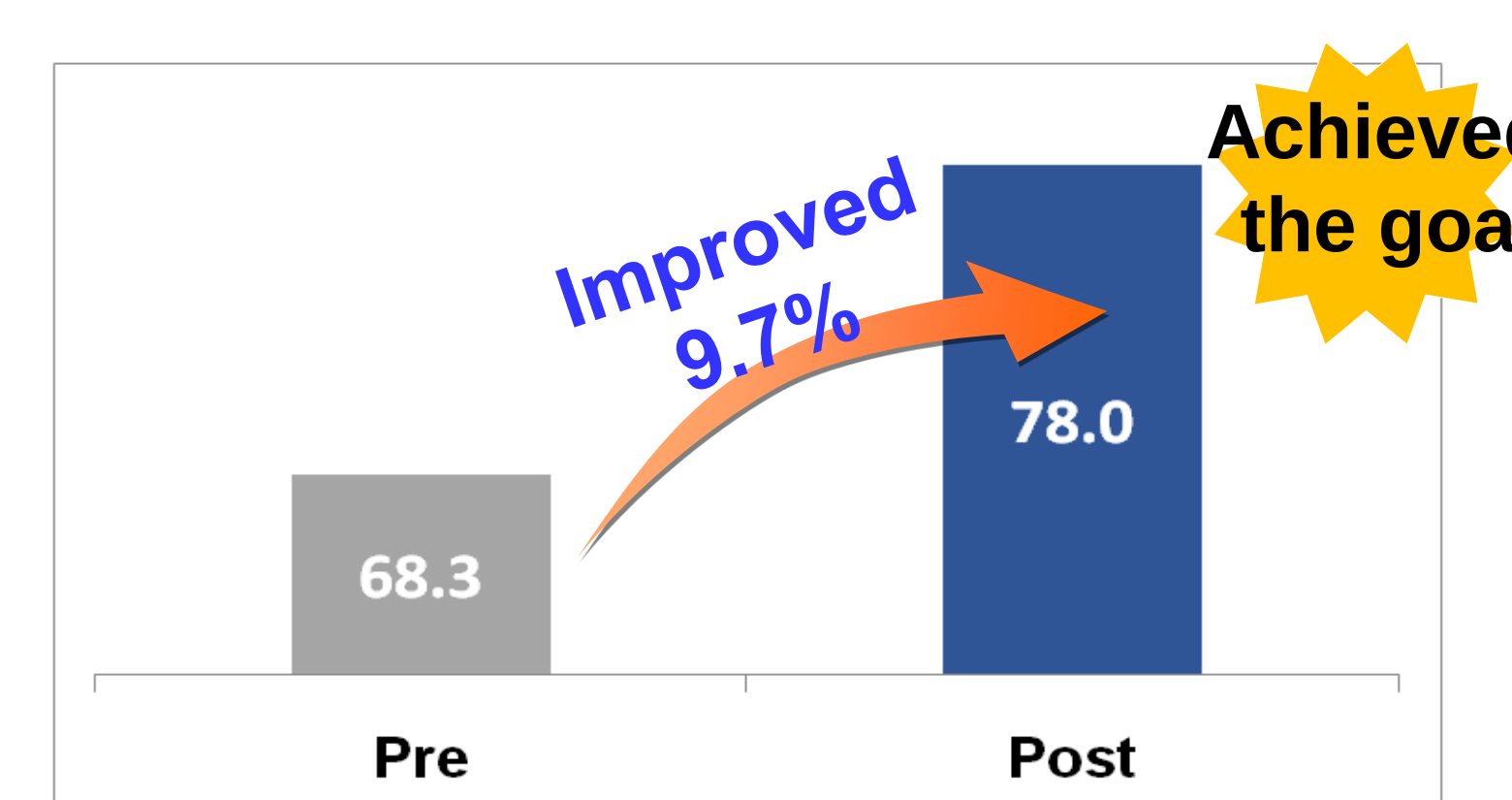
① Fall prevention awareness level : Improved 5.9%

Target not met (10% improvement), However, the significant improvement in "not missing subjects" and "accurately installing equipment."



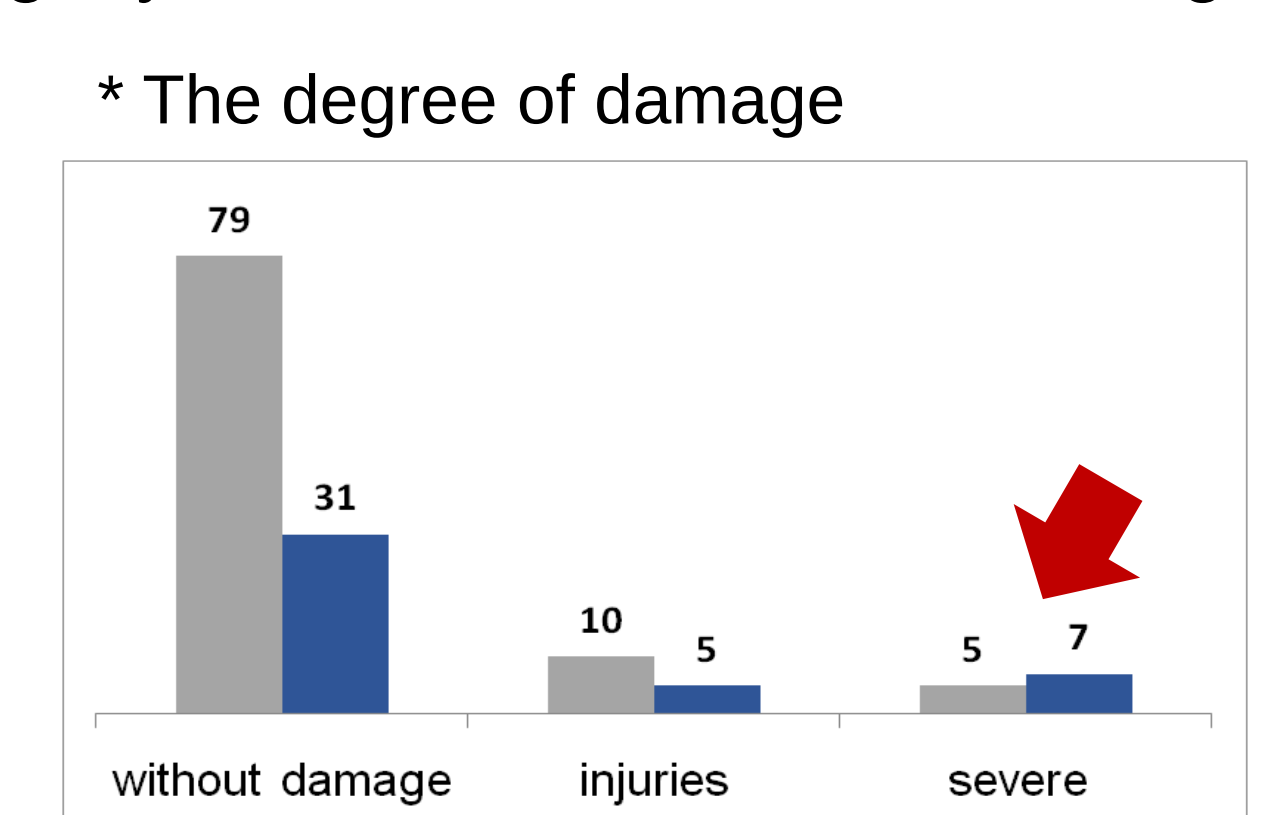
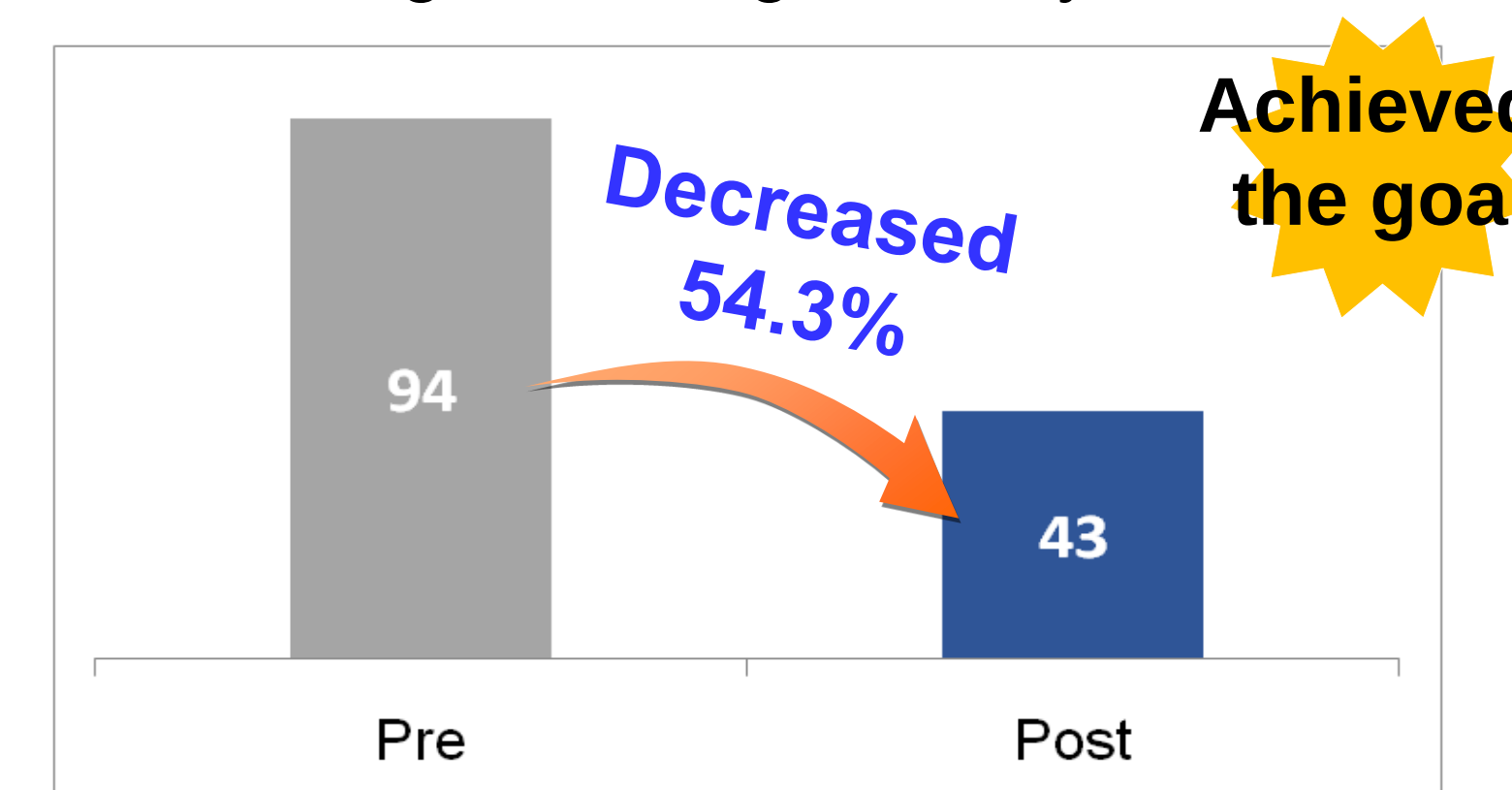
② AI monitor utilization rate : Maintain 78% utilization rate

Increased from 68.3% to 78.0%, achieving the goal (always 75% utilization rate).



③ Fall incidence rate : Decreased 54.3%

Achievement of the goal by decreasing 54.3% in post compared to pre (30% reduction). "No damage" was significantly reduced, but slightly increased for "Severe damage".



Conclusion

- As a result of applying the AI monitor fall prevention program, nurses' awareness of fall prevention and AI monitor utilization rate improved, and the fall incidence rate decreased significantly.
- However, the severity of falls has increased somewhat, so more strengthened nursing intervention is needed to reduce serious damage. It also proposes repetitive and additional studies to measure the effectiveness of accurate AI monitors.
- Through this study, it was partially confirmed that the fall prevention program using AI is effective in preventing falls, and I think it is of great significance in that it presented an innovative direction for fall prevention nursing in the future.