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Use Fall Prevention Smart Technology assisted Medical Decision-Making to Reduce Fall rate of the Stroke Patients at Home

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Objective

Fall injury is the biggest complication after stroke and an important quality indicator of hospital. Feng-yuan Hospital's Rehabilitation Department has begun to improve the risk factors for falls of hospitalized stroke patients with Team Resource Management (TRM) in 2010. After improvement, the incidence of hospitalized falls has been reduced from 0.2% to 0.13%.

It is hoped that this anti-fall plan could be extended as 'Fall- Prevention 2.0' after the patient is discharged from the hospital. It has been applied to stroke patients with Post-Acute-Care(PAC) program since 2014.

Methods

Based on the results of the literature review, we have developed a 'Fall Prevention Smart Technology assisted Medical Decision-Making Module':

1. Peer group: fall prevention education during hospitalization and home environmental modification education.
2. After the medical records are electronicized, the indicators are visualized through Tableau software. It is convenient to communicate suggestions for home environmental modification for high-risk fall groups (BBS <40 and Gait speed <0.8 M / s).
3. "Home Environment Assessment and Modification with wearable smart device and app" to achieve more accurate assessment of home environment safety.

Results

Decrease the fall rate of stroke patients with PAC after being discharged from hospital: 13.79% (107/9 follow-up period: 10.77%) (108/9 re-follow-up: 15.14%). The home-based fall rate is better than the literature data by 37%. It is also better than the general stroke patients that did not participate in the PAC plan: 29.82% (p <0.05).(Figure 1.)

Those who were assessed as high-risk fall groups and received the "Home Environment Assessment and Modification with wearable smart device and app ", had a fall rate of 3.33% (tracking period: 8.33%), which was significantly lower than 17.86%(p=0.10) (tracking period: 30.77%,p=0.04), who did not received , which represents the importance of "Home Environment Assessment and Modification " on reducing the risk of falling at home. (Figure 2.)

Conclusion

This 'Fall Prevention Module' can significantly improve the stroke patients' falling rate at home. We are still making progress. This year (108/2), in line with the Long-Term Care Plan 2.0, we use the opportunity of Home- based rehabilitation to provide free "Home Environment Safety Assessments", and let us obtain the "Long-Term Care Plan 2.0 Friendly Discharge Readiness Service Hospital Certification".

Key words: Walking steps, Smart bracelet, Regular exercise, Health Promotion, Walking ability

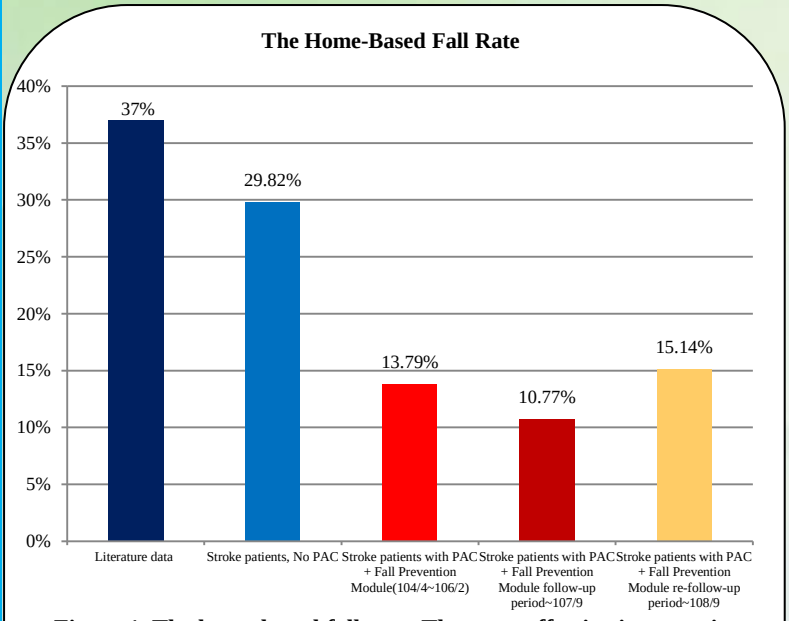

Figure 1. The home-based fall rate: The more effective interventions (PAC high-intensity rehabilitation, health education, high-risk notification, transformation)
The better the anti-fall effect.

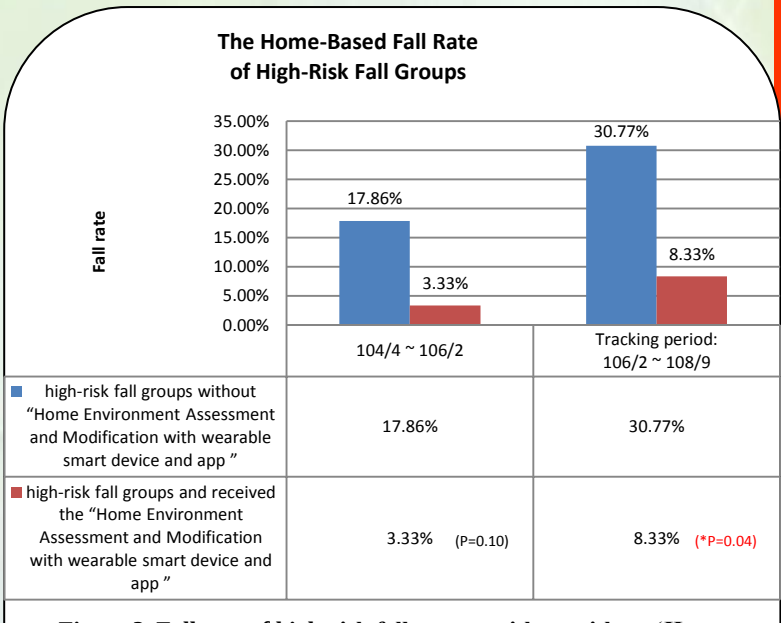

Figure 2. Fall rate of high-risk fall groups with or without 'Home Environment Assessment and Modification with wearable smart device and app'