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Development of a Medication Therapy Management Falls Risk Reduction (MTM FRR) Clinic Staffed by an ASCP Student Chapter

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Objective

To describe the creation and development of a Medication Therapy Management Falls Risk Reduction (MTM FRR) clinic that utilizes student-conducted MTM to identify the risk for falls associated with medication use in the elderly population.

Methods

Creation: In the fall of 2013, University at Buffalo School of Pharmacy and Pharmaceutical Sciences (UB SPPS) faculty were contacted by the Allegany and Western Steuben County Rural Health Network (AWSRHN) about participating in a Falls Risk Reduction project. AWSRHN had developed fall prevention programs that addressed improving strength, balance, and the home environment of seniors, however, they also wanted to incorporate medication risk into the program to prevent falls. The original clinics utilized a "brown-bag" format and provided participating community-dwelling seniors with a list of Fall Risk Increasing Drugs (FRIDs) and a fall risk score based upon the work of Beasley and Patatanian which was also adopted by the Agency for Healthcare Research and Quality (AHRQ).[1]

Development: Upon review of the feedback from the first year of the clinics, two areas were identified that required evolution. The AHRQ tool had deficits, such that it was developed for hospital use, it lacked important FRIDs, and although it identified medication regimens with falls risk, it was unable to stratify that risk well. Secondly, the ability to communicate falls risk findings to providers was lacking. To address these issues, the clinics were changed to incorporate the MTM format and a more discriminating clinical decision support tool was created. The UB SPPS had begun to provide all P3 students with the American Pharmacists Association Medication Therapy Management certificate in 2014, therefore the MTM clinic format fit well with what students were trained to do and it allowed them to accumulate the necessary experience to fulfill the MTM certificate requirements. In 2015, a Medication Report Card for Seniors (MaRCS) that included a Medication Fall Risk Assessment Tool (MFRAT) was created to rapidly identify FRIDs on a patient's medication profile and rank them based on falls risk-increasing potential.[2] The MFRAT assigns a numerical point deduction factor to each FRID which correlates to its associated risk of falls in the elderly based on published medical literature. The prototype MaRCS also easily allowed students to create and supply each patient with a Medicare Part D-required Personal Medication Record (PMR) and Medication Action Plan (MAP) for addressing the risk of falls attributed to medications. Patients also received their MFRAT fall grade which provided them with education on their medications and feedback regarding their falls risk. Additionally, if a patient's regimen included medications with a high risk for causing falls, students communicated these finding to the participant's provider with suggestions of appropriate interventions to reduce future falls risk.

Data Collection: During the 2015-16 academic year, the MTM FRR clinic held 9 different events. Data is presented on the sites, students' activities, and findings of participants' MTM sessions.

Results

Sites: Nine MTM events were held at 7 different sites (Figure 1) with 6 events held in underserved rural areas. The number of participants at each site ranged from 1 to 14 with a mean of 6.7.

Student activities: Twenty-three student pharmacists participated and completed a mean of 2.2 MTMs with 2 students completing all 5 required MTMs for their APhA Certificate.

Participant findings: Medication therapy reviews were conducted on 60 participants ranging in age from 49-92 years old (mean 74.7). The participants were taking a range of 2 to 20 medications, with an average of 6.3 prescription and 3.7 over-the-counter medications, and an average of 4.0 FRIDs each. Of the FRIDs, 13.3% of the participants were on a benzodiazepine, 11.7% were on an SSRI, 3.3% were on a Z-drug, and 3.3% were on a muscle relaxant. Overall, the participants had a mean fall grade of 3.0 (B). Analysis of the participants' MFRAT grades revealed an inverse relationship between the number of prescription medications and fall grade that is statistically significant ($p<0.001$) with a correlation of $r=-0.60$, indicating that the fall grade will decrease as the number of prescription medications taken by a senior increases. The worst fall scores were seen in patients who were taking a combination of FRIDs, such as a benzodiazepine and muscle relaxant, showing a fall grade of F, or a benzodiazepine and an SSRI, showing a fall grade of D+.

Figure 1: Number of Participants per Clinic Site

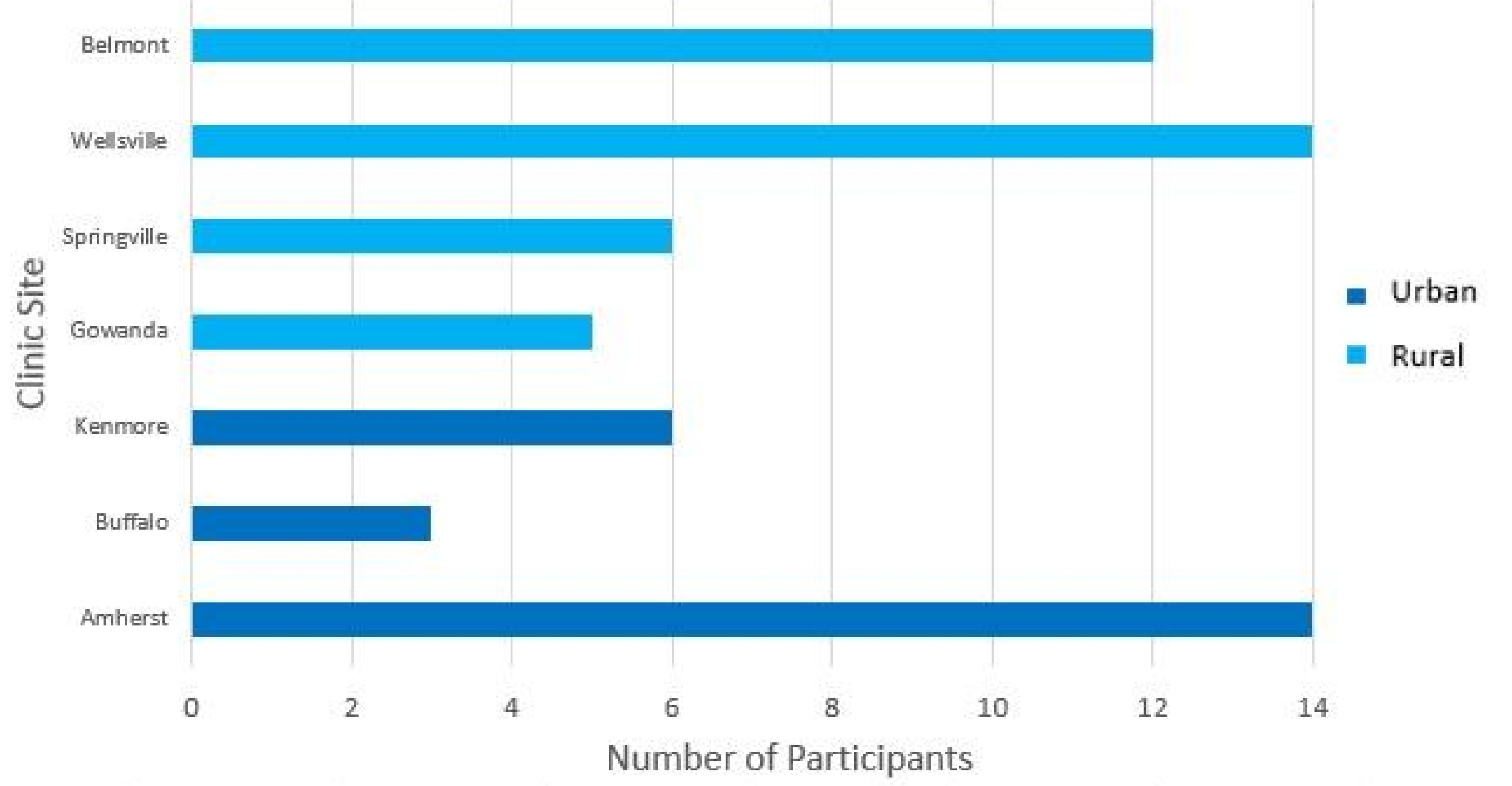


Figure 2: Distribution of Fall Grades

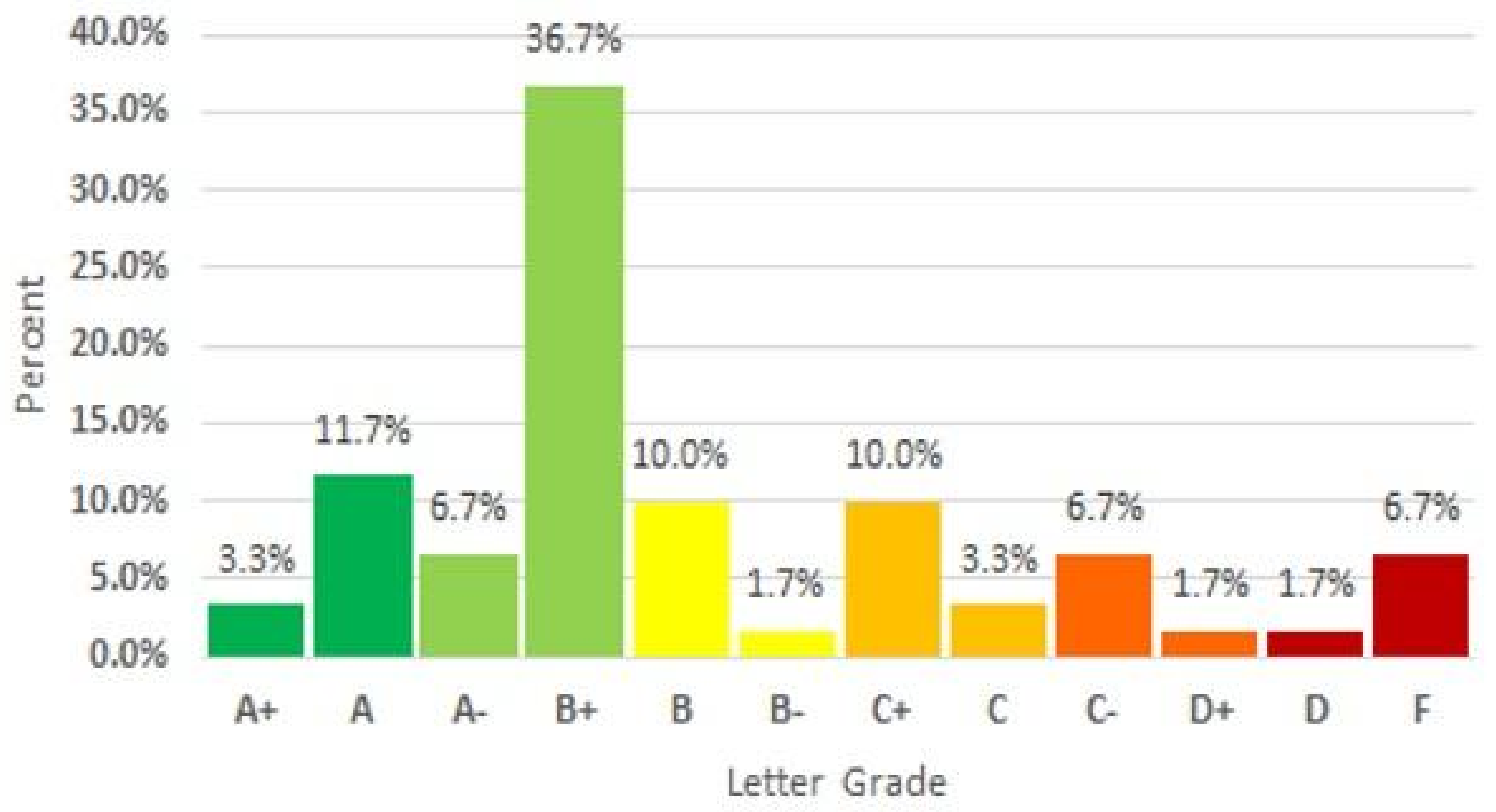
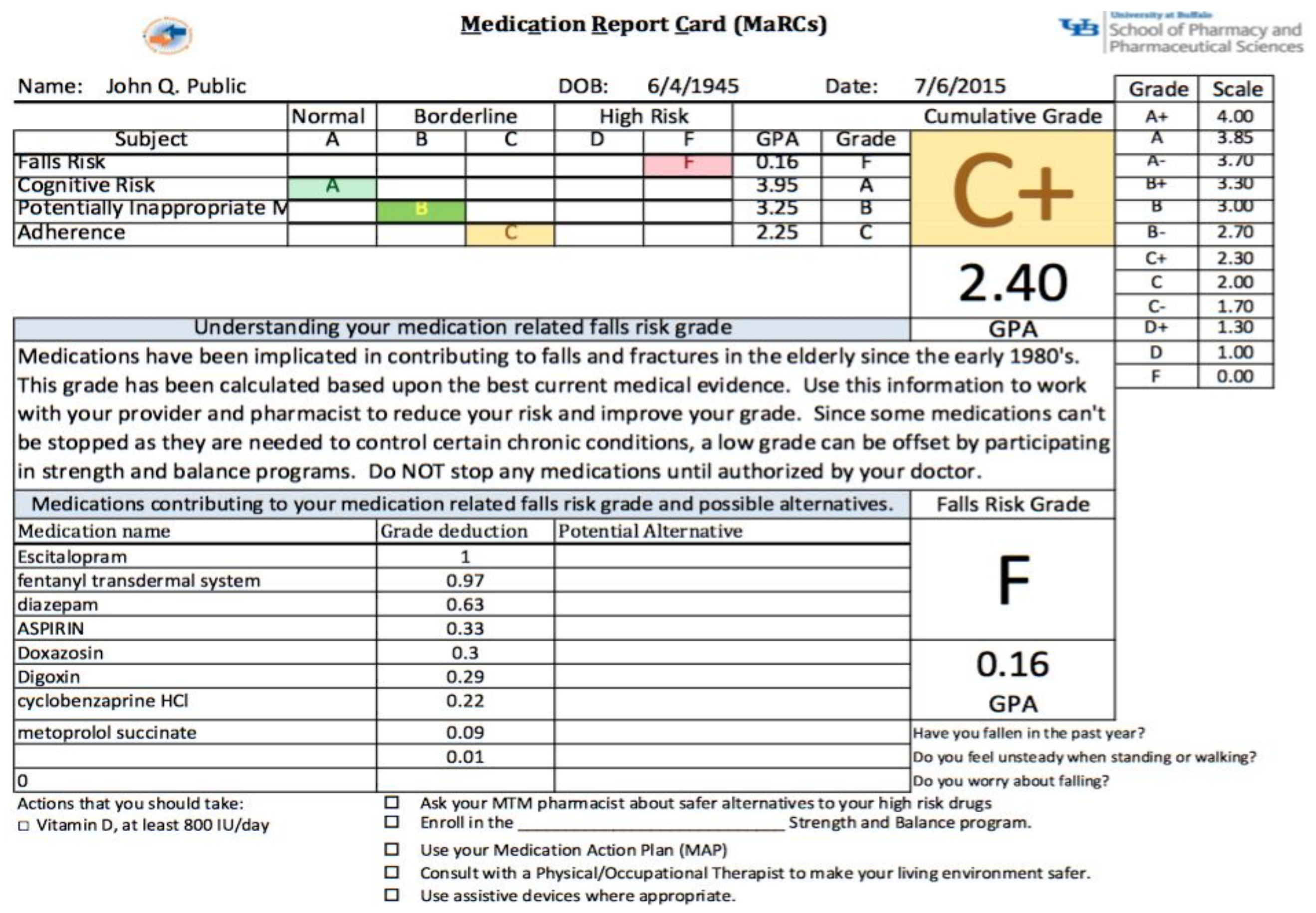


Figure 3: Example Medication Report Card for Seniors (MaRCS)



Medication Report Card (MaRCs)

Name: John Q. Public DOB: 6/4/1945 Date: 7/6/2015

	Normal	Borderline		High Risk				Cumulative Grade
Subject	A	B	C	D	F	GPA	Grade	
Falls Risk					F	0.16	F	C+
Cognitive Risk	A					3.95	A	
Potentially Inappropriate M		B				3.25	B	
Adherence			C			2.25	C	
								2.40
								GPA

Grade	Scale
A+	4.00
A	3.85
A-	3.70
B+	3.30
B	3.00
B-	2.70
C+	2.30
C	2.00
C-	1.70
D+	1.30
D	1.00
F	0.00

Understanding your medication related falls risk grade

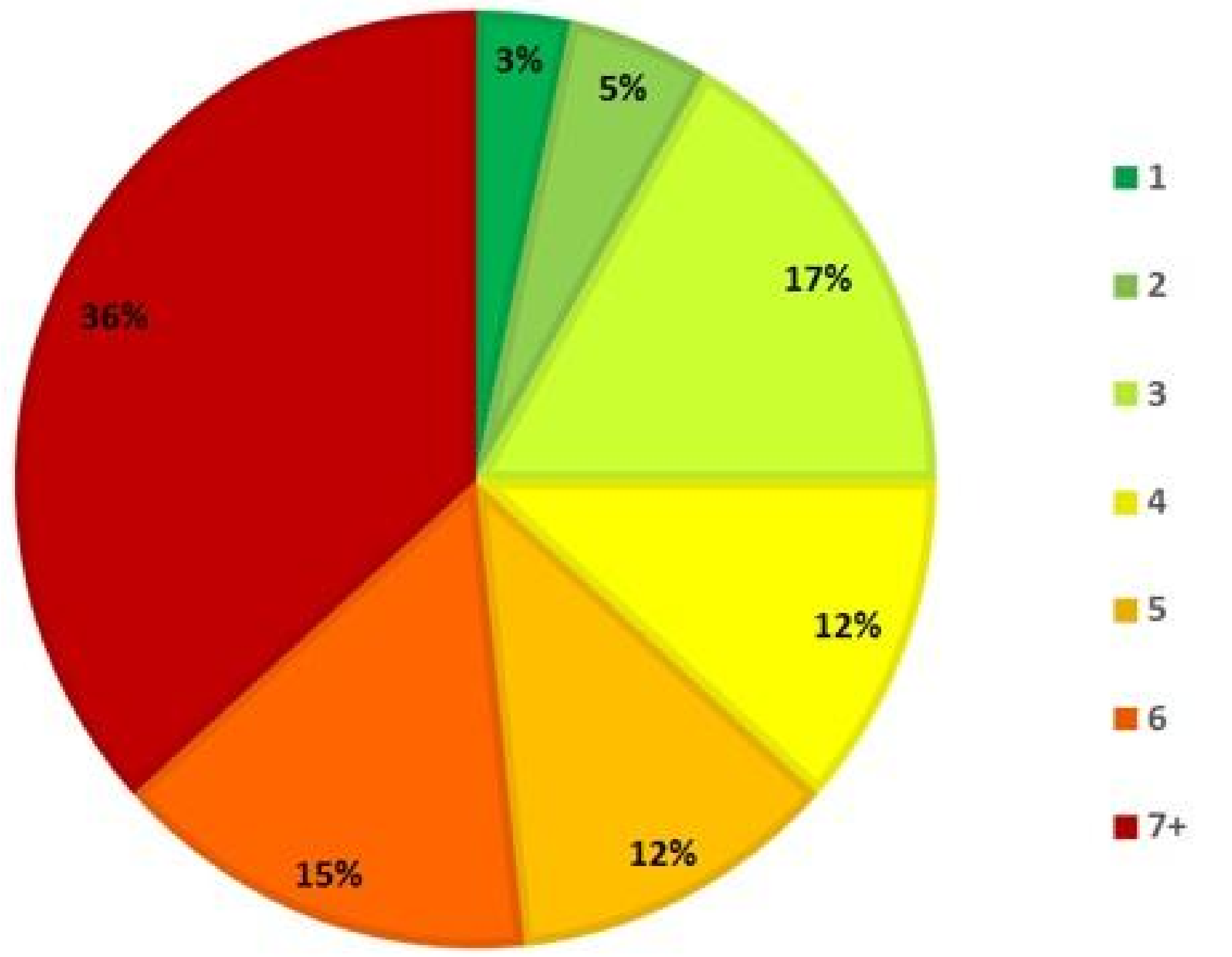
Medications have been implicated in contributing to falls and fractures in the elderly since the early 1980's. This grade has been calculated based upon the best current medical evidence. Use this information to work with your provider and pharmacist to reduce your risk and improve your grade. Since some medications can't be stopped as they are needed to control certain chronic conditions, a low grade can be offset by participating in strength and balance programs. Do NOT stop any medications until authorized by your doctor.

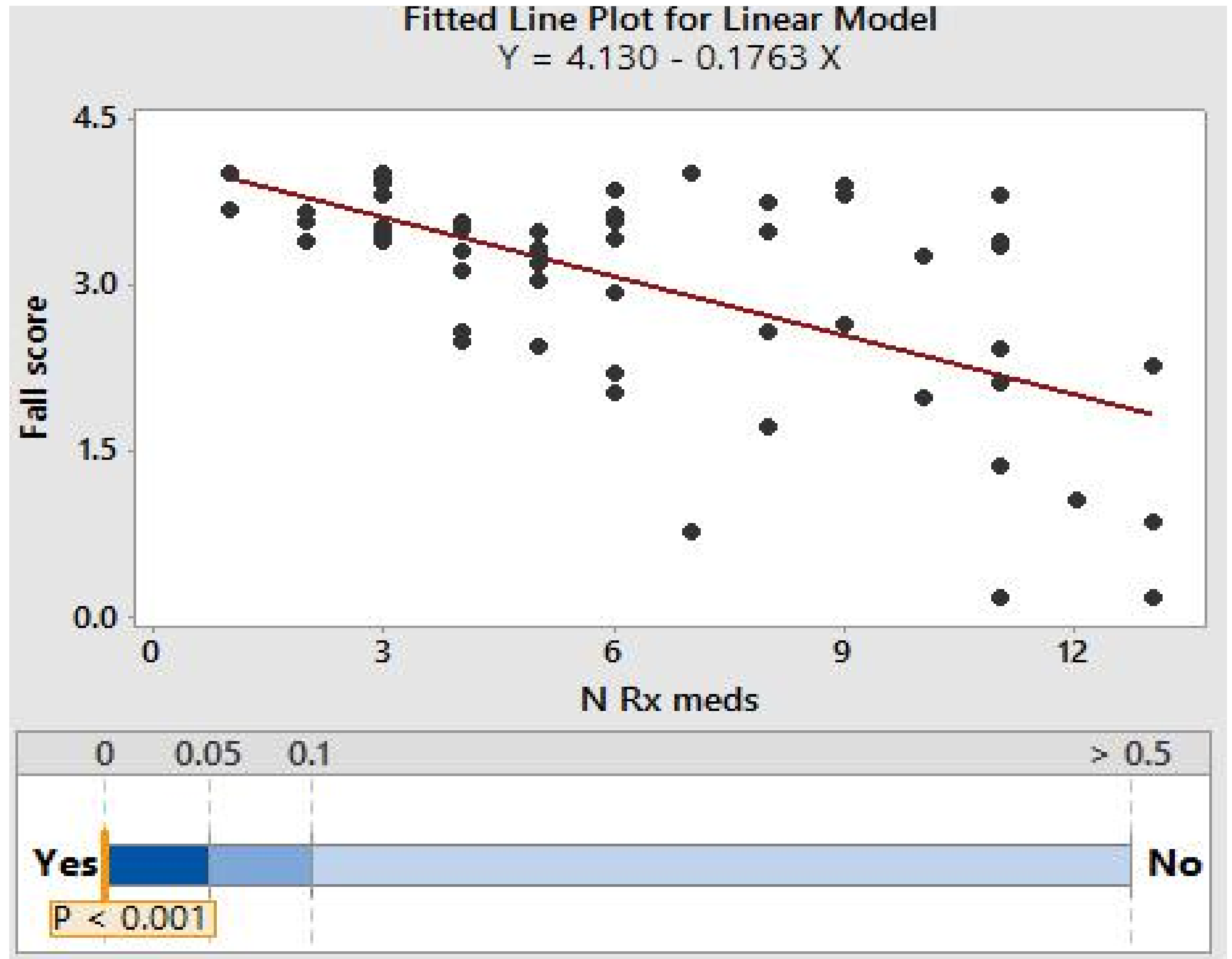
Medications contributing to your medication related falls risk grade and possible alternatives.

Medication name	Grade deduction	Potential Alternative	Falls Risk Grade
Escitalopram	1		F
fentanyl transdermal system	0.97		
diazepam	0.63		
ASPIRIN	0.33		
Doxazosin	0.3		0.16
Digoxin	0.29		
cyclobenzaprine HCl	0.22		GPA
metoprolol succinate	0.09		Have you fallen in the past year?
	0.01		Do you feel unsteady when standing or walking?
0			Do you worry about falling?

Actions that you should take:
☐ Vitamin D, at least 800 IU/day
☐ Ask your MTM pharmacist about safer alternatives to your high risk drugs
☐ Enroll in the ______________________ Strength and Balance program.
☐ Use your Medication Action Plan (MAP)
☐ Consult with a Physical/Occupational Therapist to make your living environment safer.
☐ Use assistive devices where appropriate.

Figure 4: Number of Prescription Medications





The relationship between Fall score and N Rx meds is statistically significant ($p < 0.05$).

Discussion/Conclusions

Discussion: Through the MTM FRR clinics, senior participants gained knowledge about their falls risk based on the number and types of medications they take and were given strategies to reduce that risk. They were also provided with information to identify FRIDs and guidance to address the associated risks via the personalized MAP. Since many of the MTM events took place in rural areas, students were able to provide valuable health care services to communities of underserved patients. Not only did the participants benefit from these clinics, but the students were also able to gain valuable experience in identifying FRIDs and in conducting MTM reviews necessary to complete the APhA "Delivering Medication Therapy Management Services" certificate program. The MFRAT provided an association between the known falls risk factor, "number of medications", and the tool generated falls risk grade.

Conclusions: MTM FRR clinics staffed by student pharmacists are an effective strategy to provide needed medication falls risk information to seniors across various settings. Using the tools described, one pharmacist was able to effectively supervise multiple students trained in MTM delivery.

References

1 Beasley B, Patatanian E. Development and Implementation of a Pharmacy Fall Prevention Program. Hospital Pharmacy. 2009;44(12):1095-102.
2 Heiermann A, Monte SV, Feuerstein SG, Jacobs DM, Wahler RG. Validation of a Novel Medication Profile Based Falls Risk Assessment Tool. Journal of the American Pharmacists Association. 2016;56(3):e43-e4.

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