Systematic inhaler education improves inhaler technique and asthma control

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Background:

Asthma is a common disease with 7% incidence in Thailand[1]. The main therapy is inhaled corticosteroids and bronchodilators. Poor inhaler technique associated with poor asthma control. We found incorrect technique up to 63 % (figure 1). The systemic inhaler education (SIE) can provide asthma improvement[2,4]. However, there is limited data in Thailand.
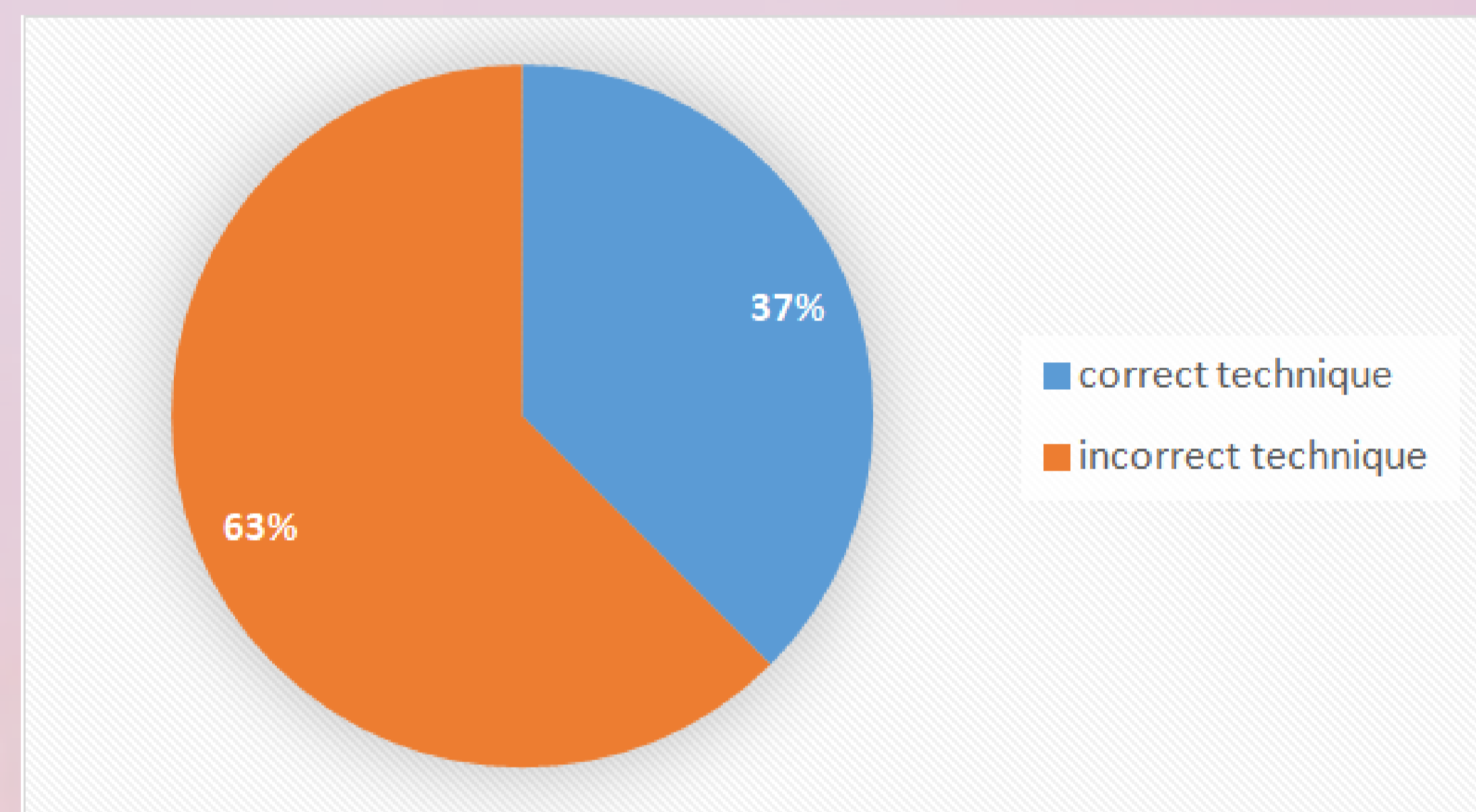

Figure 1: showed percent of correct and incorrect inhaler technique in general clinic

Objectives:

To explore the effect of SIE by respiratory pharmacist (RPH) in asthma clinic at King Chulalongkorn Memorial hospital (KCMH) regarding technical improvement, asthma control, and exacerbation.

Methods:

This is a prospective study in KCMH from 1 January 2019 to 31 July 2019. All patients were educated with SIE by RPH. The demographic data, completeness of inhaler technique, device, Asthma Control Test (ACT) score, and exacerbation rate were collected at visit 1 and visit 2. The data were compared with inhaler education by general pharmacist.

Results:

There were 88 asthma patients with mean age 63.13 year and average 1.82 devices. 60 patients were female. The most common device is MDI. The demographic data is shown (table1).

Table 1: demographic data.

Characteristics	General Clinic (N = 24)	Asthma Clinic (N = 64)	Total (N = 88)
Age (years)	61.21	65.05	63.13
Gender			
- Male (%)	10 (41.67)	18 (28.13)	28 (34.90)
- Female (%)	14 (58.33)	46 (71.88)	60 (65.10)
Number of devices per patient	1.71	1.94	1.820
Category of devices			
- MDI (%)	21 (56.76)	123 (51.04)	144 (53.90)
- DPI (%)	15 (40.54)	108 (44.81)	123 (42.68)
- SMI (%)	1 (2.70)	10 (4.15)	11 (3.43)

MDI = Metered Dose Inhaler, DPI = Dry Powder Inhaler, SMI = Soft Mist Inhaler

The initial completeness of inhaler technique was 88.72% and 92.58% in general pharmacist and RPH respectively. After SIE, the completeness of inhaler technique increased from 92.58% to 94.63%. The completeness of inhaler technique decreased with long follow up interval (95.91% to 93.35%) (Figure3). The most common incorrect device is MDI with poor coordination between pressing and inhaling medication (56.96%).
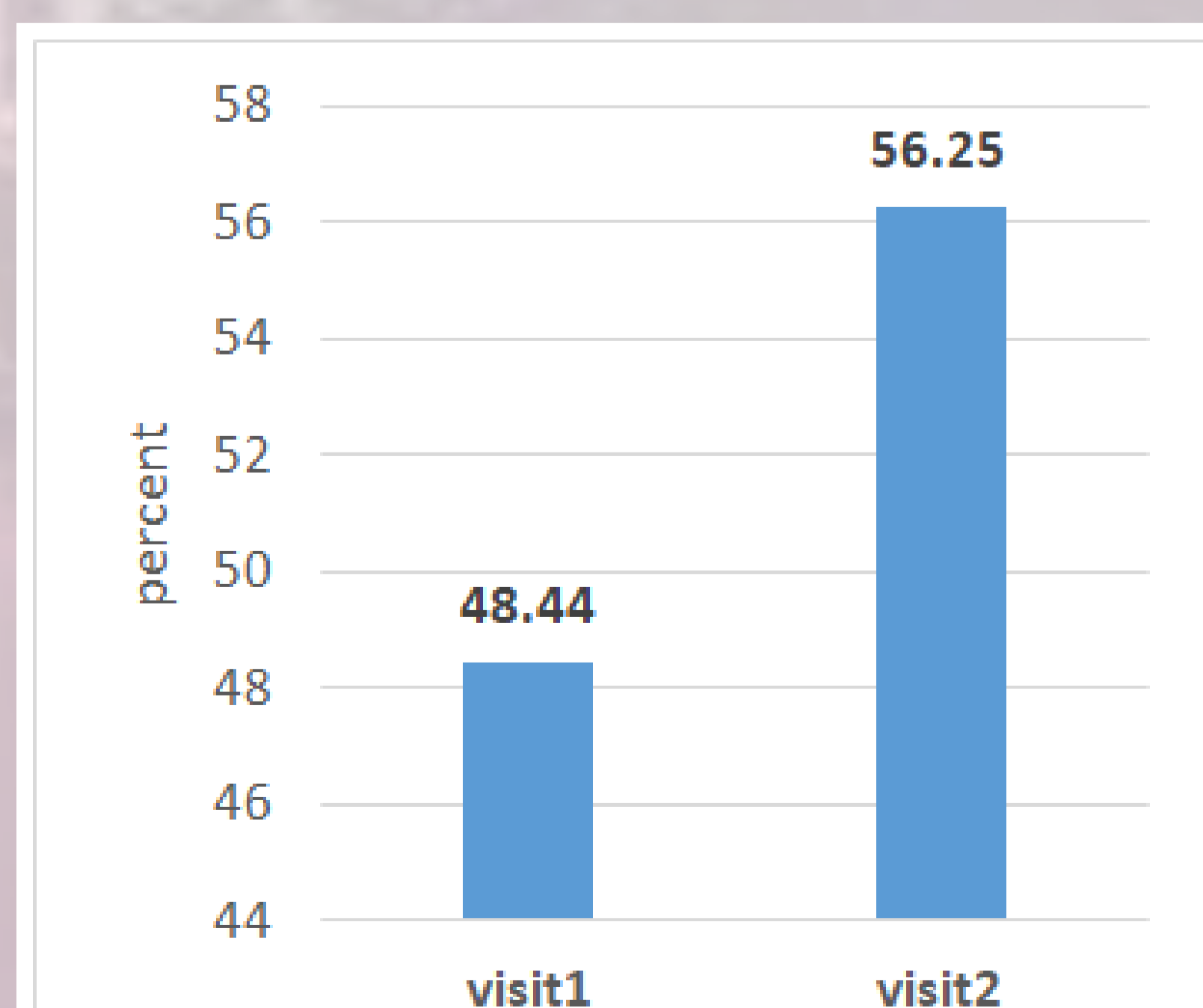

Figure 2: showed percent of patient correct inhaler technique between visit 1 and visit 2 of patient in
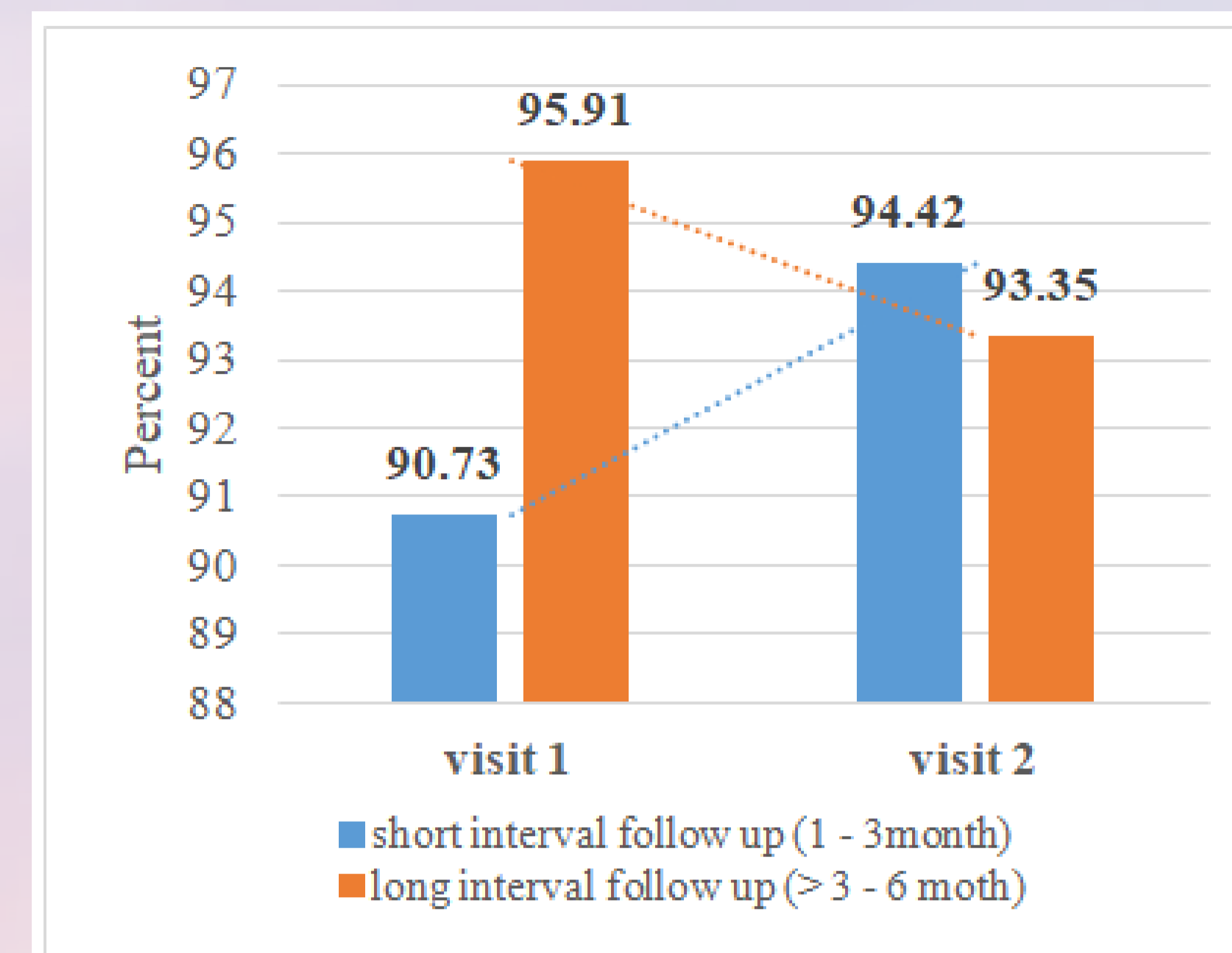

Figure 3: showed percent completeness of inhaler technique between short and long interval follow up of patient in asthma clinic.
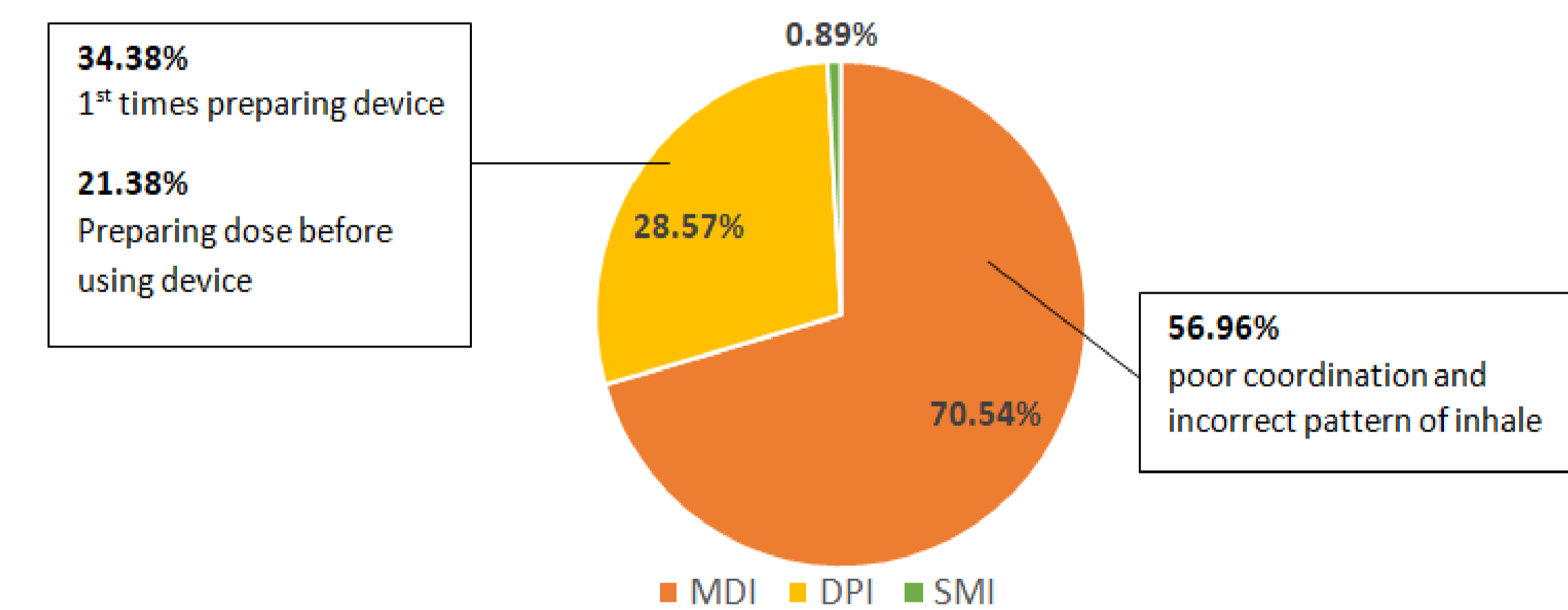

Figure 4: Incorrect technique according to device

The ACT was increased after SIE from 21.85% to 22.68%. The severe acute exacerbation was lower in asthma clinic with SIE when compared with general pharmacist group (1.67% vs 16.67%) (Figure 6).
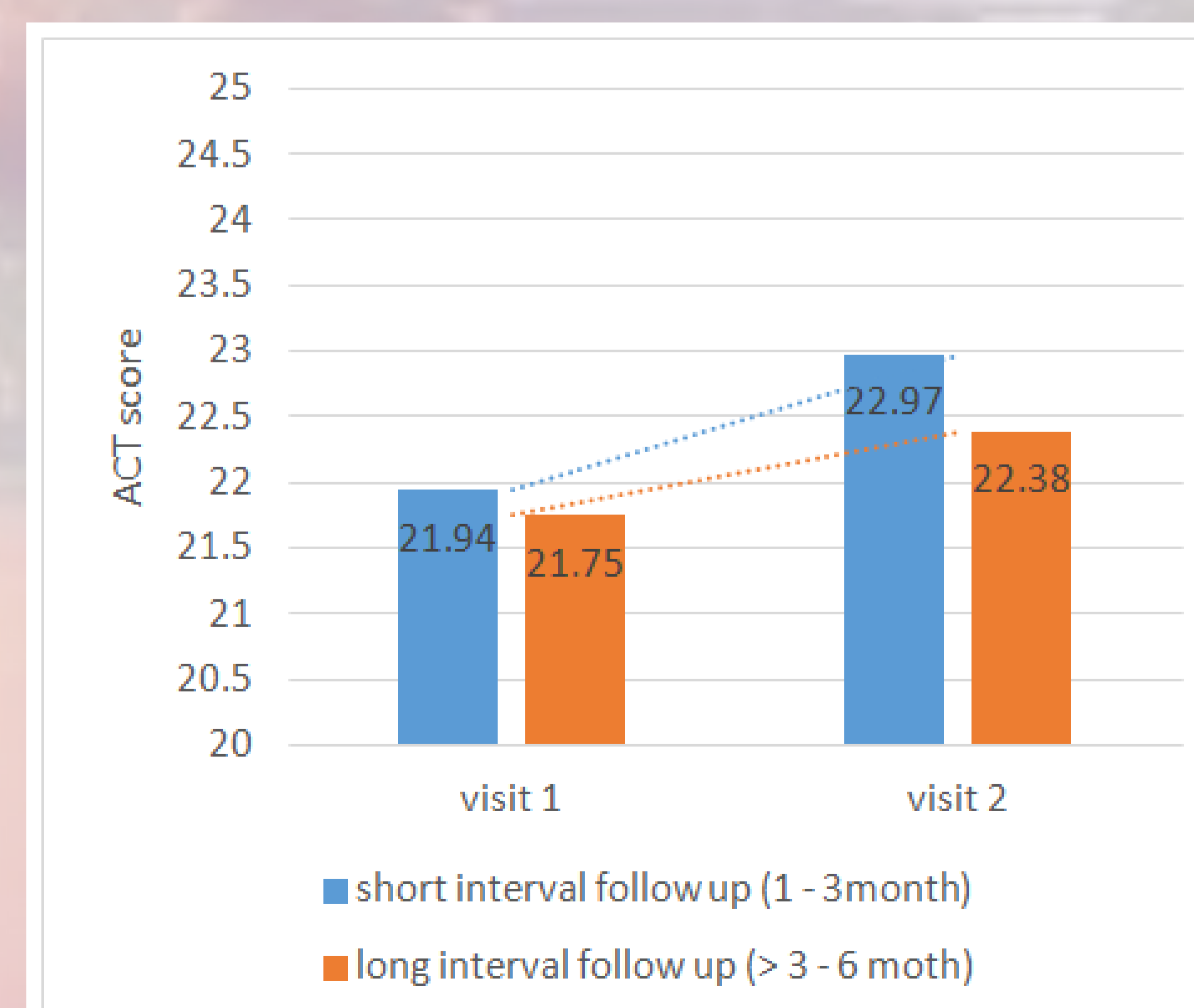

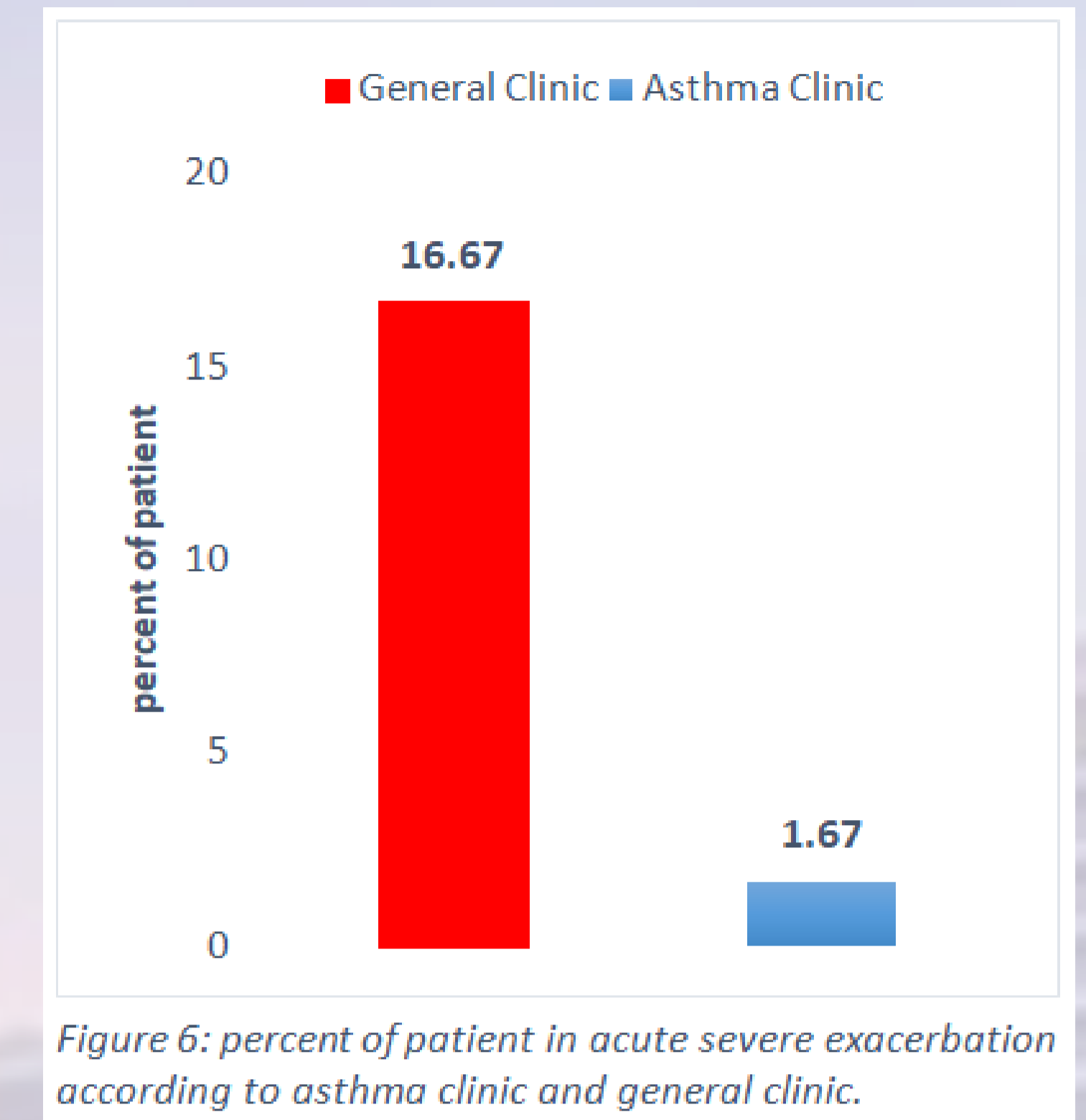Figure 5: Asthma control test score between visit 1 and visit 2 of

Figure 6: percent of patient in acute severe exacerbation according to asthma clinic and general clinic.

Discussion:

This is a prospective study to explore effect of SIE in Thai patients. Our study shows improvement of ACT and exacerbation after SIE. The most common incorrect inhaler device is MDI which is corresponded to previous study. The SIE improves completeness of inhaler technique. The short follow up interval shows better improvement which explained by better patient memory. Poor coordination between pressing and inhaling medication remains the most common incorrect MDI technique which is in our study is higher than previous reports[3]. It is important to check this step to improve technique. In DPI, first times preparing device is the most common incorrect step. In addition the RP provides better education than general pharmacist.

Conclusion:

SIE provided by RPH improves completeness of inhaler technique, asthma control and exacerbation. RP provides better education than general pharmacist.

Keywords: systematic inhaler education, respiratory