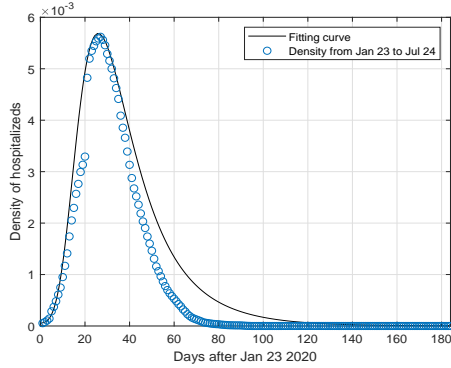


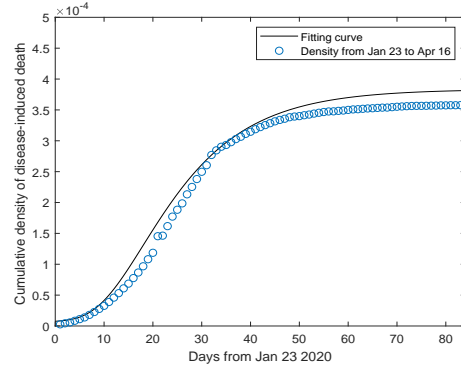
Fig. 1. Classes and transitions in the model.

Table 1. Estimated initial values of variables and parameters for system (2.2).

Parameters	Description	Value	Source
A	The constant recruitment rate to S	0.017	data
θ	Disease intensity increasing factor	75	[4]
β	Infection rate from S_a to E	0.027	[21,4]
$\theta\beta$	Infection rate from S to E	0.027	[21,4]
δ	Relative infection probability of E compared with I	0.23	[4]
α	Awareness spreading rate from S to S_a	0.152	Fitted
ω	Awareness losing rate from S_a to S	3×10^{-6}	Fitted
γ_1	Hospitalized rate of I to H	0.11	[16]
γ_2	Recovery rate of I	0.330	[16]
γ	Recovery rate of H	0.13	[16]
σ	Progression rate of E to I	0.2	[16]
d	Natural death rate	0.01	data
μ	Disease-induced death rate	0.003	[16]
c	Natural recruitment rate of media reports	0.8	[4]
η	Implementation rate affected by epidemic	2.951	[16]
τ	Depletion rate of media reports	0.735	[16]
Variables	Description	Initial quantity	Source
S	Unaware susceptible humans	9.00×10^6	[22]
S_a	Aware humans	2132	[22]
E	Exposed humans	4000	[22]
I	Infected humans	935	[22]
H	Hospitalized humans	494	[22]
R	Recovered humans	34	[22]
M	Media items	163	[16]



(a)



(b)

Fig. 2. The black curves are the fitting curves, the blue circles represent (a) the density of confirmed cases per day from Jan 23 to Jul 24, (b) the cumulative density of disease-induced death from Jan 23 to Apr 16.

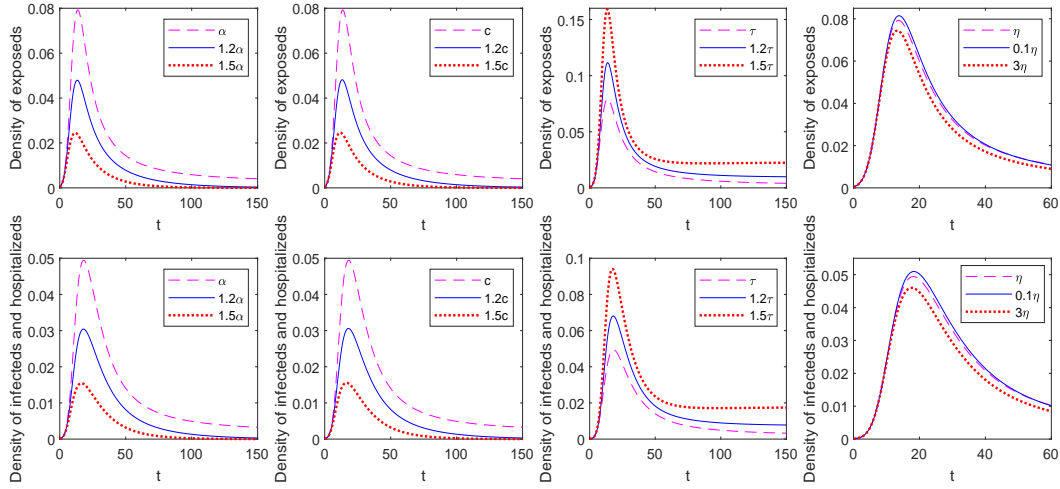
Table 2. Sensitivity indexes of R_0

Parameters	Sensitivity indexes of R_0	Corresponding % changes ^a
A	$\Upsilon_A = +1.0000000000$	-1.00000000
θ	$\Upsilon_\theta = +0.8193245475$	-1.22051752
β	$\Upsilon_\beta = +1.0000000000$	-1.00000000
δ	$\Upsilon_\delta = +0.3425161904$	-2.91957000
α	$\Upsilon_\alpha = -0.7623081596$	$+1.32823580$
ω	$\Upsilon_\omega = +0.0000000001$	-4015.71245
γ_1	$\Upsilon_{\gamma_1} = -0.159653905$	$+6.36028540$
γ_2	$\Upsilon_{\gamma_2} = -0.478961716$	$+2.12009510$
σ	$\Upsilon_\sigma = -0.2948971420$	$+3.50418150$
μ	$\Upsilon_\mu = -0.0043541974$	$+233.210464$
c	$\Upsilon_c = -0.7620593242$	$+1.32867530$
τ	$\Upsilon_\tau = +0.7620593248$	-1.60513058

^a The corresponding % changes needed to affect a 1% decrease in the value of R_0 .

Table 3. The sensitivity indexes of P^*

Parm	Sensitivity indexes				
	S	S_a	E	I	M
A	-0.013436645	-1.007742642	+0.523538652	+0.231142893	+0.522481371
θ	-0.9874059e-4	-0.001838875	+0.922673e-4	+0.407361e-4	+0.920810e-4
β	-0.243485264	-4.582431196	+0.229806228	+0.101459704	+0.229342137
δ	-0.013416143	-0.252494927	+0.012662422	+0.005590473	+0.012636851
α	-0.012016129	+0.901210758	-0.042342549	-0.018694282	-0.042257039
ω	+0.197431496	-14.90138000	+0.695710988	+0.307157169	+0.694306005
γ_1	+0.013066122	+0.246794533	-0.012374363	-0.005874713	-0.011782796
γ_2	+0.013078626	+0.245856439	-0.012330301	-0.005855260	-0.012487102
σ	+0.013281899	+0.250144895	-0.014553368	-0.005493466	-0.012417572
μ	+0.013078626	+0.245856439	-0.012330301	-0.005855260	-0.012487102
c	-0.002273524	+0.170513988	-0.008011467	-0.003537072	+0.128059134
τ	+0.002484162	-0.186311053	+0.008753715	+0.003864775	-0.139923580

**Fig. 3.** The effects of α , c , τ and η on the density of exposed, infected and hospitalized humans.

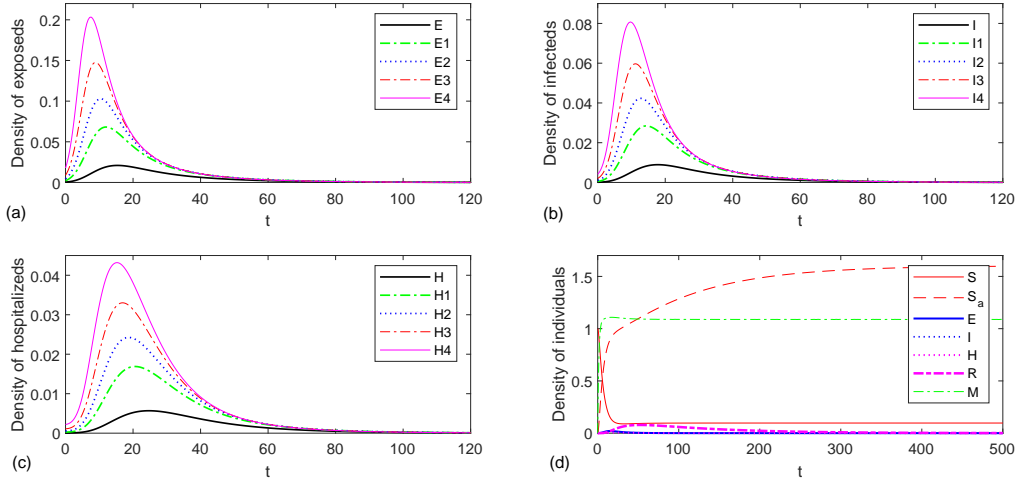


Fig. 4. Dynamical behavior around disease-free equilibrium P^0 .

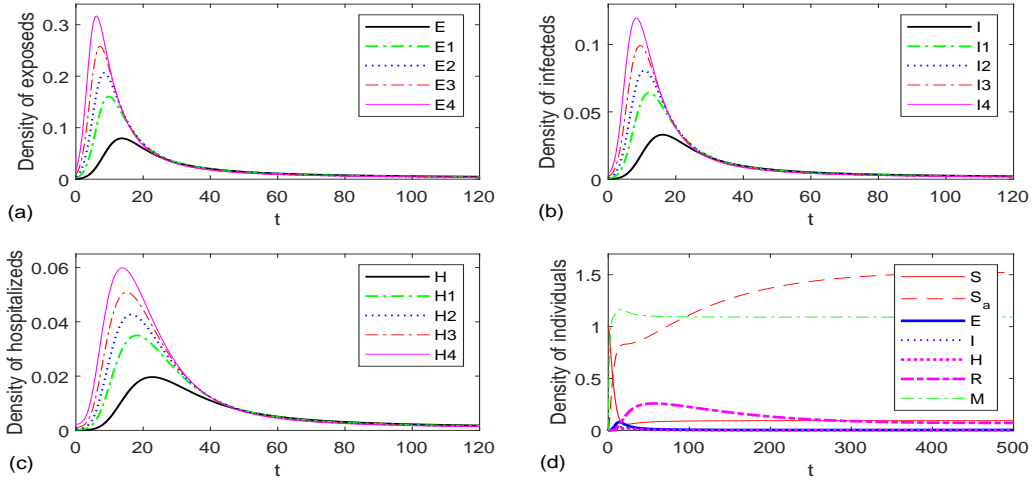


Fig. 5. Dynamical behavior around endemic equilibrium P^* .